MYRMECIA

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THE COVER

The cover illustration for this year's *Myrmecia* features an illustration by Jenni Thurmer of the South Australian Museum of Katie's springtail, *Katianna australis* Womersley, a member of the globular springtail family Sminthuridae. This species, described from Tasmanian pastures in 1932, is common through southern Australia. Species of *Katianna* normally inhabit native grasses but a small number, including *K. australis* have been able to colonise exotic pastures.

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MYRMECIA

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In addition, loose inserts and pamphlets supplied by the advertiser will be included in a mailout for $50 per item. The items should be of a size which will not project beyond the pages of *Myrmecia*.

Copy Deadline for Next Issue

Material for publication in the August 1992 issue of Myrmecia should be in the hands of the Editor at the address below by Friday 24 July 1992. Submission on IBM-compatible floppy disk in a major word processing format is prefered. Details are available from the Editor.

Murray FLETCHER
News Bulletin Editor
Biological and Chemical Research Institute
PMB 10, RYDALMERE, NSW 2116

Editorial

A "controversy" has arisen within the Society concerning the position of Convenor of the Conservation Committee. This issue of *Myrmecia* contains, in addition to this delicately worded Editorial, a comment from President Gordon Hooper, a letter to the Editor from Peter Cranston and a significant proportion of a Conservation Committee report from Penny Greenslade - all on the same topic.

The controversy has arisen because the Executive have exercised their constitutional right to change the Convenor of this important Society Committee.

A biological society as large and representative as ours has a responsibility to contribute to public scientific comment on any issue affecting entomology. The Conservation Committee, which has been a feature of the Society for nearly as long as the Society has existed, prepares submissions on conservation matters which concern entomology. Over the last few years this committee has been very active as can be seen from the Conservation Committee reports published in *Myrmecia*. This activity has provided valued entomological input to public discussion of conservation issues and has considerably raised the public profile of our Society in arenas where we should be prominent.

However, guidelines established in 1968 required that submissions from Society Committees be made through the Executive of the Society and this has not been happening with the Conservation Committee. One of the reasons put forward to explain this is the short time usually provided for comment or submissions on such matters. Relaying prepared submissions through the Executive for approval often leaves little time for appropriate research into the issues and preparation of the submission.

As a member of the Society, I helped elect the current Executive to represent my entomological interests where appropriate. With this heavy burden on their shoulders, the current Executive, all of whom have applied entomology backgrounds, do not feel qualified to comment upon nor to approve submissions on conservation issues. They are therefore reliant on the Conservation Committee to represent the entomological interests of members and to maintain the integrity of the Society. If they feel more comfortable with Lionel Hill as convenor of the Committee it is probably because Lionel has a background in both applied entomology and conservation.

This should not be seen as a slight to Penny, but as an admission of the Executive's own perceived inadequacies when dealing with conservation issues. They will, in effect, be using Lionel as their referee for Conservation Committee submissions. I know the Executive do not want to stop Penny from contributing and have expressed both support for her continued activity within the Committee and gratitude for her contribution as Convenor over the last four years. I hope that Penny maintains her enthusiasm and activity within the Committee as this will greatly assist Lionel in his new role as Convenor.

Murray FLETCHER
Editor

A Message from the President

I recently received a letter signed by a significant number of members which expressed concern with what was perceived to be the attitude of the current Executive towards the Conservation Committee and/or its activities.

It is not true as stated in that letter that "the Executive has expressed the view that there is little or no support for the kinds of activities that the Conservation Committee has been pursuing". I find it regrettable that clarification of this matter was not sought from the Executive by Dr Cranston before the letter was distributed.

Regardless of what area of entomology various members of the Society pursue, fundamentally we are all biologists and hence I would assume that all AES members are committed to invertebrate conservation, and indeed more broadly to maintaining the integrity of our environment. Certainly your Executive is committed to these goals and to the role of the Conservation Committee in fostering them.

A further issue raised in the letter concerned the position of the Convenor of the Conservation Committee. Currently, the Executive appoints the Convenor. At the 37th Council Meeting in 1989 it was unanimously decided that all Executive appointments would hold office for up to 2 years and would be eligible for reappointment. Ms Penny Greenslade has been the Convenor for over 4 years and the Executive took the view that it was an appropriate time to enable another member to contribute in this important position. (Rotation of office bearers in the Society is, after all, the norm). Consequently Mr Lionel Hill was appointed as the new Convenor.

Ms Greenslade has contributed very significantly to the Conservation Committee, and hence to the Society, in her term as Convenor. The Executive acknowledged this contribution in writing to both Ms Greenslade and Dr Cranston some weeks ago. Ms Greenslade has been invited to remain a member of the Conservation Committee and I hope that the Society will continue to benefit from her expertise and commitment.

The guidelines established for the Conservation Committee in 1968 make it clear that any submission on conservation matters is to be endorsed by, and conveyed to the appropriate authority by, the Executive. It is the role of the Conservation Committee to prepare that submission. I firmly believe that while the preparation of any given submission might, for a variety of reasons, be undertaken primarily by one member of the Committee, at least one other member of the Committee should consider and endorse the submission before it is forwarded to the Executive. It is important that, to the extent possible, any submission by the Society should reflect the views of the membership as a whole.

In recent months a number of changes to the procedures involved with the Conservation Committee has been raised, e.g. having a member of the Executive officially on the Conservation Committee (our By-Laws state that the Vice President and Secretary are *ex officio* members on all committees of the Society), and having the Convenor of the Conservation Committee as an elected officer of the Society (this would involve a change to the Constitution). The Executive is considering these matters and will welcome your views on them.

Gordon HOOPER
President

Letters to the Editor

April 10, 1992

Dear Editor,

The new Executive's decision to replace the convenor of the Conservation Committee will be known to most members of the Australian Entomological Society by the time this *Myrmecia* reaches readers. Perhaps the reasons that prompted this unprecedented move will be provided elsewhere in this issue: certainly clarification is needed. At the time of writing explanations appear somewhat contradictory, including suggestions that the convenor (Penny Greenslade) failed to consult appropriately, yet deluged the previous Executive with documents concerning insect conservation.

Whatever the motivation for the removal of the convenor, many entomologists contacted following the news believe that this action represented a vote of no confidence in the policies of the Conservation Committee. Within a few days over 40 members either signed a letter of protest to the Executive or wrote their own protests. At the very least, the new Executive must allay this interpretation of their action by forcefully stating their support for Ms Greenslade's highly successful work in raising the profile of the Society in insect conservation issues.

Some of the problems appear to stem from a constitutional arrangement that has the Conservation Committee report through an already overworked Executive. Obviously, when the Conservation Committee is relatively inert (as has been the case in the past) the mechanism functions satisfactorily. However, at times when the Conservation Committee is very active problems arises (as Bob Taylor tells me occurred also some years ago).

In discussions prior to the 1992 AGM, and in the past week, a solution seems clear - our constitution needs changing. I suggest that the Conservation Committee should comprise elected representatives, with a convenor elected either by the membership at large, or by those attending the AGM. The Committee would be delegated by the Executive to pursue its objectives (which may be formally defined if need be), without the requirement to have the Executive vet each and every submission. The Conservation

Committee would report annually to AGM for approval and election and/or ratification of delegates.

I hope this view will engender discussion, perhaps through the medium of *Myrmecia*, and that a formal resolution may be prepared before the next AGM.

Yours sincerely,
Peter S. CRANSTON

EXECUTIVE REPORT

Meetings

The Executive met on 19 February, 20 March and 24 April 1992

New Members

We welcome the following new members:

Elected 19 February 1992

Dr G. GURR, PhD, Orange Agricultural College, Leeds Parade, Orange, NSW 2800. Geoff is a Lecturer in Agronomy with previous research in nematology. His present interests include insect pests and their control.

Elected 20 March 1992

Dr V.J. BAULE, PhD, CSIRO Division of Entomology, GPO Box 1700, Canberra ACT 2601. Valerie is a Research Officer with a background in ecology and molecular biology. Her interests include insect biochemistry and the biological control of insect pests.

Ms L.M. LOWE, Ass. Dip. Appl. Science, CSIRO Division of Wildlife and Ecology, PMB 44, Winnellie NT 0821. Lynette is a Technical Assistant with interests in the Orthoptera and other invertebrates.

Mr E. TSYRLIN, 12 Powderham, Rd, North Caulfield, Melbourne, Vic., 3161. Edward is a third year student in the Department of Ecology and Evolutionary Biology at Monash University. His interests include insect systematics, the philosophy of systematics and macrophotography.

Elected 24 April 1992

Dr E. BRUZZESE, Keith Turnbull Research Institute, PO Box 48, Frankston, Vic., 3199, returned to Ordinary Membership.

Ms M. COUSINEAU MSc, Dept of Entomology, University of Queensland, St Lucia, Qld, 4072. Michelle is a PhD student and has interests in aquatic ecology and evolutionary processes.

Miss M.W. KINUTHIA MSc, Department of Crop Protection, Waite Campus, University of Adelaide, PO Glen Osmond, SA 5064. Wanja is a PhD student with interests in insect ecology, pest management and biological control.

Mrs L.F. McGOWAN BSc, 37 Harley Parade, Prospect, Launceston, TAS 7250. Louise is a Research Officer with the Queen Victoria Museum and has interests in the conservation of invertebrates, biological control and (a hopeful future project) aquatic mites.

Prof. B.J. RICHARDSON, Faculty of Science and Technology, University of Western Sydney Hawkesbury, Bourke St, Richmond, NSW 2733, returned to Ordinary Membership.

Mr A. SAEED MScAgr (Hons), Department of Crop Protection, Waite Campus, University of Adelaide, PO Glen Osmond, SA 5064. Azhar is a PhD student with interests and studies in the systematics of Hymenoptera, particularly of parasitoids.

Mr R.G. SIMMS, 29 Kentdale St, Grange, SA 5022. Ronald is a retired Fellow of the Royal Society of South Australia and has interests in speleology and palaeontology. He is currently studying a cave cricket in the Naracoorte cave system.

Mr J. STANLEY B.Rural Sc, Department of Agronomy and Soil Science, University of New England, Armidale, NSW 2351. John is a PhD student and is studying the status of predators of *Heliothis* spp in cotton crops in an overall integrated pest management program.

Ms J. STAPLES MSc, CSIRO Division of Entomology, GPO Box 1700, Canberra, ACT 2601. Judy is an Experimental Scientist with interests in biological control and the interactions of fungi and termites.

Retired From Membership

Mr J.T. HAMILTON, Biol. & Chem. Res. Inst., PMB 10, Rydalmere, NSW 2116

Mr A.S. MOLYNEUX, Agr. & Vet. Chem. Section, DPIE, GPO Box 858, Canberra, ACT 2601

Dr A.D.M. SMITH, CSIRO Entomology, GPO Box 1538, Hobart, Tas. 7001

Change Of Address Or Title

[The following list is an extensive one resulting from updating and collating of the Treasurer's and Secretary's membership lists following transfer from Perth. Some of the changes listed are therefore not recent and some may already have appeared in *Myrmecia* - Ed.]

Dr G.R. ALLEN, Dept of Zoology, University of WA, Nedlands, WA 6009

Mr F.B. ANTRAM, PO Box 799, Manly, NSW 2095

Australian Entomological Supplies Pty Ltd, 21/3-11 Flora St, Kirrawee NSW 2232

Ms R. BROE, changed to News Bulletin Only membership

Mr M. CAHILL, Rothamsted Experimental Station, Harpenden, Hertfordshire, AL5 2JQ, England, airmail delivery of "*Myrmecia*"

Dr S.C. CAIRNS, changed to News Bulletin Only membership.

Dr I.C. CAMPBELL, Centre for Water Studies, Monash University, East Caulfield, VIC 3145

Miss L.J. CHARLTON, 107 The Esplanade, Mt Pleasant, WA 6153

Miss N. CHIENGWATTANA (initial change from M to N)
Dr G.P. CLOSS, Division of Science, Latrobe University, PO Box 963, Wodonga, VIC 3689 (change of title and address)
Dr R. COY, Dept of Conservation and Environment, PO Box 260, Orbost VIC 3888 (change of title and address)
Dr D.F. CROSBY, changed to Retired Membership
Dr D.J. DALL, CSIRO Entomology, GPO Box 1700, Canberra ACT 2601
Mr R. DALLWITZ, 95 Brereton St, Garran, ACT 2605
Mr P.C. DANGERFIELD, Dept of Crop Protection, Waite Campus, University of Adelaide, PO Glen Osmond SA 5064
Mr J.C. DEAN, 96 Argyle Rd, Kew, VIC 3101
Ms G.M. DOLVA, 27 Constance St, Darlington, WA 6070
Dr V.A. DRAKE, Dept of Physics, Univ. College, Aust. Defence Forces Academy, Northcott Drive, Campbell, ACT 2600
Miss J.A. EWERS, Lot 152, Gleneadie Close, Hampton Park, VIC 3967
Mr I.G. FAITHFUL, 7/20 Adam St, Burnley VIC 3121
Dr G.S. FARRELL, Tropical Ecosystems Res. Centre, CSIRO, PMB 44, Winnellie, NT 0821
Ms J.H. FISK, 161 Somerville Rd, Hornsby Heights, NSW 2077
Mr M.B. FLETCHER, PO Box 203, Launceston TAS 7250
Mr W.E. FROST, Dept of Crop Protection, Waite Campus, University of Adelaide, PO Glen Osmond SA 5064
Mr J.G. GELLATLEY, changed to Retired Membership
Mr J.D. GILLETT, "Wondaree", Friday Hut Rd, Bangalow, NSW 2479
Dr T.R. GLARE, change of title.
Miss A.J.A. GREEN, 3 Stewart St, Launceston, changed to News Bulletin Only membership, address changed.
Mr H.G. GREENING, 16 Selkirk St, Winston Hills, NSW 2153, changed to Retired Membership, address changed.
Dr C.E. HAGAN, changed to Full Membership
Dr J.G. HAMILTON, Aust. Plague Locust Commission, DPIE, GPO Box 858, Canberra ACT 2601
Mr J.R.E. HARDY, Box 201, Basket Range, SA 5138
Mr J.H. HAWKING, Murray/Darling Freshwater Research Centre, PO Box 921, Albury, NSW 2640
Dr T.A. HEARD, change of title.
Ms K.L. HERGSTROM, 5 Alphington St, Alphington, VIC 3078
Mrs A.R. HILL, will be at South Pacific Commission, Private Mail Bag, Suva, Fiji Islands until Sept. 1992, then at 8a Baldwin Ave, Mt Pleasant, WA 6153
Dr A.A. HOFFMANN, corrected spelling
Prof. G.W. HOWARD, IVCN East Africa, PO Box 68200, Nairobi, Kenya
Prof. H.F. HOWDEN, changed to Retired Membership
Dr L. HUGHES, change of title
Ms J. JACKSON, changed to Full Membership
Dr W.K. JORGENSON, 9 St Amand St, Sinnamon Park, QLD 4073
Dr B.H. KAY, QIMR, PO Royal Brisbane Hospital, Brisbane, QLD 4029
Mr P.F.S. LIEHNE, "Currawinya", via Tabulam, NSW 2470, corrected initials, change of address
Dr L.A. LOBRY DE BRUYN, change of title
Dr C. LOKKERS, Anton Breinl Centre, James Cook University, Townsville, QLD 4811, change of address and title
Dr P.E. MADGE, changed to Retired Membership
Dr A.P. MACKEY, PO Box 694, Kenmore QLD 4069
Dr G. McDONALD, Institute of Plant Sciences, Swan St, Burnley VIC 3121, change of title.
Dr R.K. MENSAH, change of title, change to Full Membership
Mr D.S. MITCHELL, Dept of CALM, Wheatbelt Regional Headquarters, PO Box 100, Narrogin, WA 6312, change of address, change to News Bulletin Only membership.
Mr A.D. MOORE, Centre for Tropical Freshwater Research, Kevin Stark Research Building, James Cook University, Townsville, Qld 4811
Miss G.M. NAPIER, Graduate School of the Environment, Macquarie University, Sydney, NSW 2109
Mrs C.J. NEALE, 35 O'Connor St, Oxley, QLD 4975
Dr S. O'NEILL, Epidemiology and Public Health, Yale University School of Medicine, 60 College St, PO Box 3333, New Haven, CT 06510, USA
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Ms D.A. PATRICK, name changed to DAVIS
Miss C. PETERS, Victorian Institute of Plant Science, 475-485 Mickleham Rd, Attwood, VIC 3049
Mr D.G. PHELPS, AZI, PO Box 519, Longreach, Qld 4730
Mr R.G. PIPER, PO Box 1415, Innisfail, QLD 4860
Mr D. PRIJONO, Dept of Plant Pests and Diseases, Bogor Agricultural University, Bogor 16144, Indonesia, changed to Full Membership
Mr Q. WANG name corrected from Wang Qiao to Qiao Wang
Mr T. QIN, Division of Botany and Zoology, Australian National University, GPO Box 4, Canberra, ACT 2601
Mr L.A.J. RADUNZ, 18 Jennifer Place, Cherrybrook, NSW 2126
Dr C.A.M. REID, Division of Botany and Zoology, Australian National University, GPO Box 4, Canberra, ACT 2601
Mr N.R. RENFREY, 13 Westbrook Ave, Loxton, SA 5333
Mr G.S. RICHMOND, School of Environmental Biology, Curtin University, GPO Box U1987, Bentley, WA 6001

Miss A.M.E. ROACH, CSIRO Entomology, GPO Box 1700, Canberra ACT 2601. change to Ordinary Membership, change of address.
Dr R.C. RUSSELL, Medical Entomology Department, Westmead Hospital, Westmead, NSW 2145
Mr N.S. SHERWOOD, "Glenwood", Thuddungra, NSW 2594
Dr A.P. SMITH, Ecosystem Management Department, University of New England, Armidale, NSW 2351
Miss M.L. SOMMERS, QNPWS, PO Box 5391, Townsville Mail Centre, QLD 4820
Dr J.T. ST LEGER MOSS, 30 Melaleuca Drive, Capalaba, QLD 4157
Dr B.F. STONE, "Bindaree", 14 Spinicbrae St, Fig Tree Pocket, QLD 4069, change of address, change to Retired Membership
Dr C. STONE/Mr M.A. HORWOOD, change to individual Ordinary Memberships
Miss T.A. THUMLERT, PO Box 61, Lobethal, SA 5241
Ms C.A.P. URQUART, corrected spelling
Mr P.W. WALKER, Aust. Plague Locust Commission, DPIE, GPO Box 858, Canberra ACT 2601
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Miss R.L. WHYTE, 46 Aberfoyle St, Kenmore Qld 4069, change to Ordinary Membership
Dr P. WILLIAMS, Institute of Plant Sciences, Swan St, Burnley, VIC 3121
Mr A.E. WRIGHT, 18 Templetonia Cres, City Beach, WA 6015
Dr F.R. WYLIE, Queensland Forest Service, 80 Meiers Rd, Indooroopilly, QLD 4068

Unknown Addresses

Dr C. PEETERS, last known address was School of Biological Sciences, University of NSW, PO Box 1, Kensington, NSW 2033
Miss W. CHOKBOWONTHANSAR, last known address was Department of Zoology, University of Western Australia, Nedland, WA 6009

From The Minutes

Dr P.G. Allsopp, Chief Editor, has recommended that Dr A.J. Wapshere fill the vacancy of Technical Editor created by the departure of Dr G.G. White. Executive have agreed to the proposal, subject to consultation with other Councillors.

A promotional leaflet for membership of the Society has been prepared and will be distributed at the Fifth Australian Applied Entomological Research Conference in Canberra. Copies are also being forwarded to Regional Councillors.

The duties of Business Manager and Assistant Business Manager are being discussed with Councillors. Suggestions from other members would be welcome.

A policy statement for the Society's Conservation Committee is being finalised.

Executive are engaged in further development of a membership data base as well as a financial and budgeting reporting system.

News from the Conservation Committee - February to April 1992

This quarter has been an event-laden period in many ways! There have been a multitude of happenings of relevance to invertebrate conservation.

One of the most important was the final report from the Resource Assessment Commission (RAC) on the Timber and Forestry Industry to which we contributed three times. I have not read the two large volumes produced nor yet the smaller summary booklet in detail, but the recommendation that no more old growth forests be harvested is entirely satisfactory to us as, of course, these are the forests with the highest conservation value. The Federal Government, however, now has to make a decision as to whether to adopt the recommendations of the Commission.

The next RAC inquiry is now under way and Genevieve Carruthers is helping me (with contributions from other members of the Society) to prepare a submission which will address the terms of reference relevant to our interests, i.e. that which concerns management. We wish to emphasise that management should take into consideration sustainability and conservation of biodiversity. Buzz words I know, but they are understood by non-biologists. If anyone would like to help us with this submission by providing data or in any other way, we would be very pleased to hear from them.

The project to prepare National Estate nomination forms for invertebrate sites has continued to progress this quarter with all the South Australian sites chosen and field work done for five of them. It is becoming clear, after discussing this project with people in the ACT, NSW, SA and Qld, that Heritage registration can be very valuable in protecting the habitats of invertebrates that are restricted in distribution either naturally or from man-made fragmentation of habitats.

Of relevance to this project is the Intergovernmental Agreement on the Environment which was signed in February by all State Governments (except Tasmania) as well as the Federal Government. It covers World Heritage listings, biological diversity, climate change, environment protection measures, assessment of land use, data collection and handling as well as the National Estate. In it the States agree that the register of the National Estate "may" be considered when making land use and resource planning decisions. This should certainly strengthen the value of our listings.

This quarter also seems to have suffered from a plethora of conservation meetings. First there was a pre-Rio Earth Summit

meeting organised by the Centre for Our Common Future in Sydney which also went under the name of the 9th Eco 92 public forum of UNCED (United Nations Conferences on Environment and Development). I was asked by the Executive to attend this meeting. The emphasis here was on community participation, particularly by minority groups. Topics under discussion centred on the need for international legal reform in order to attain sustainability and conservation of biodiversity, although other related topics were also discussed.

Next there was our own AGM where Peter McQuillan organised a session on conservation. It seemed like an ideal opportunity to give members of our Society an overview of the activities of the Conservation Committee over the last four years and to plan future directions. More of that later....

Finally we have the Fenner Conference on Biodiversity at The Academy of Science. It was a very large conference with representatives from, as they say, all levels of government, industry of all kinds (mining, fishing, agriculture, forestry), and professional biologists. The aim of the Conference was to discuss the Federal Government's Draft National Strategy for the Conservation of Australia's Biological Diversity. The first day consisted of invited talks, the second was devoted to workshops and on the final day the deliberations of the workshops were presented. Two of the most interesting talks were by women. Pam Walker of the Northern Territory Cattlemens' (sic) Association explained to us very firmly why the Draft Strategy should be abandoned and rewritten without any scientists participating. Local councils were represented by Nicky Goudberg who gave an excellent talk pointing out how this level of government has been ignored in the discussions so far and what a large store of local knowledge and influence on land management they have. I attended a workshop chaired by Roger Kitching on Monitoring. We had a very mixed group which made attempts to obtain agreement challenging. One thing became clear, i.e. that the current EIS system is difficult to abide by. An important recommendation stemming from the workshop was that there should be a network of long term monitoring sites set up in Australia in order to attempt to record changes in diversity. I was unable to attend the final day so missed (apparently) some spirited discussions. The Society, in collaboration with the Systematic Botany Society, will be sending a written submission on the biodiversity document, prepared by Ebbe Neilsen, to which a number of members have contributed.

And now to politics. This will be my last report to *Myrmecia* as Convenor, as the new Executive have replaced me. The decision was both sudden and unexpected, although I have been permitted to finish the projects in progress. I was told that the new Executive wanted "a change in direction" in Conservation Committee activities and that in future only one major project would be approved which would take the committee a couple of years or so to complete instead of preparing submissions on relevant land management issues and other activities we have been pursuing (see *Myrmecia* 1988-1992). I was also told that the Executive believed that this was the wish of Society members.

This is the very opposite of the impression I have received from innumerable Society members both at the AGM and at other times all over Australia. We have had enormous support both verbally and by contributed information both verbal and written. The large number of people who signed letters of protest to the President over the issue in a short space of time testifies to that alone.

There is no doubt that the Committee's role has changed over the last few years from being largely reactive to adopting a more proactive stance. It has been in response to changing needs in the Australian Community. By that I mean the increased interest by government and the wider community in environmental matters and a new appreciation of the relevance of invertebrates. I have always felt strongly that the Society, through its Conservation Committee, has a responsibility to offer public comment on these issues stemming from our expertise in entomology. We are the largest biological society in Australia and by offering objective, unbiased, information scientifically based, we provide a balance between the Industry and Conservation movements' positions where objectivity has sometimes not been very evident.

The Convenor of the Conservation Committee is currently appointed by the Executive and is not an elected position. The Committee cannot act without prior approval of the Executive. This has meant that decisions have been needed from the Executive on conservation matters in days rather than the normal month or two. It is equivalent to the News Bulletin editor needing Executive ratification on everything printed in *Myrmecia* (which could be construed as censorship) or the Chief Editor being unable to send papers for refereeing without Executive approval.

We have found the current arrangement time consuming, both for the Executive and the Committee. Moreover, the Executive are usually not equipped in "skills or knowledge" to make such decisions. The Conservation Committee discussed this problem at length last year and a majority concluded that a solution would be to have the Convenor (and possibly all members) elected by the AGM. This would require a slight change in the Constitution, but then the Constitution is at present rather deficient as far as specifying arrangements for subcommittees. Also, we feel a change is appropriate since the CC is not a temporary committee; it was established only one year later than the Society itself.

The new Executive was made aware of the problems and decided to solve them by (virtually unilaterally) deciding to drastically limit the activities of the Conservation Committee. This is all very comfortable and convenient for the Executive, but is it the right decision and is it the one most Society members want? I think not.

As an example, our influence so far has been considerable. The contribution to the NSW Southeast Forest debate was widely quoted and many non-entomologists have read it and not only congratulated us on it, but it has also opened their eyes to invertebrates as a diverse and abundant group of functional importance and conservation significance in ecosystems. Over 20 members of the Society contributed to that submission. If the Executive has their way there will be no more public comment of this kind.

Furthermore, we are not alone in presenting a public profile. The Australian Ecological Society, the Systematic Botany Society and the New Zealand Entomological Society have all put effort into comment on land management enquiries, and in New Zealand they have been doing it for far longer than we have.

For us to continue in this way I suggest that the Society rather than the Executive alone should determine structure and function of the Conservation Committee by having at least one member elected at the AGM.

Penelope GREENSLADE

Obituary

Herbert George Andrewartha 21 Dec. 1907 - 27 Jan. 1992

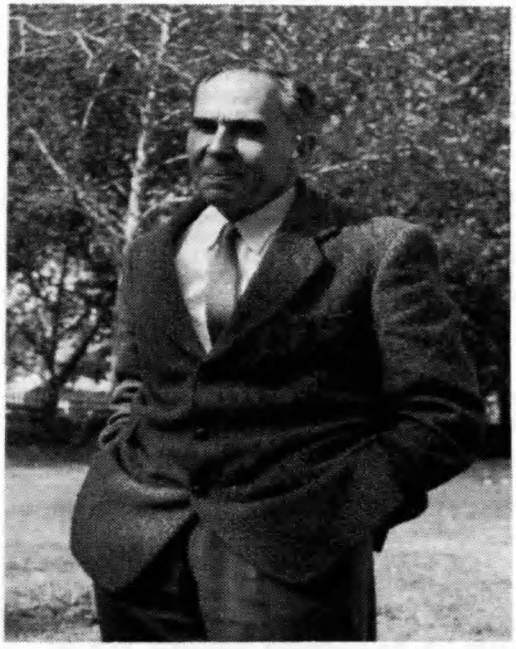
Professor Herbert George Andrewartha, "Andy" to his friends, was educated at the Perth Modern School and The University of Western Australia, where he graduated in Agriculture.

On graduating he was appointed as an entomologist in the Western Australian Department of Agriculture but soon moved to an appointment with CSIRO in Melbourne, where he was able to take his Master's degree. From there, in 1935, he joined Professor J. Davidson at the Waite Agricultural Research Institute in the University of Adelaide to work on the grasshopper, *Austroicetes cruciata* that was, at that time, ravaging marginal farming areas of South Australia and Western Australia. He was awarded a Doctorate of Science for that work.

During this period Davidson had begun a long-term study of the fluctuations in numbers of the apple thrips, *Thrips imaginis*, that was causing a great deal of damage to apple crops throughout southern Australia, and Andrewartha took a deep interest in the work as he and Davidson became more and more interested in the theory of population ecology. Davidson died in 1945 and it was left to Andrewartha to analyse the fifteen years of data on *Thrips imaginis* and to publish the results. These papers showed that most of the variability in the numbers of thrips from day to day and from year to year could be accounted for by data obtained from meteorological records, leaving no place for the competitive interactions that, at that time, were widely regarded as the key to understanding fluctuations in numbers in animal populations. These papers brought him international attention in the ecological world.

During this close collaboration, Andrewartha and Davidson had discussed writing a book on theoretical ecology but it fell to Professor L.C. Birch, a former colleague at the Waite Institute, to collaborate after Davidson's death. The result was "The Distribution and Abundance of Animals", published in 1954, that brought them international recognition as foremost population ecologists.

By this time Andrewartha's thinking had moved far from the field of entomology and in 1954 he moved to the Zoology Department of the University of Adelaide as Reader-in-Charge of a small "Unit of Animal Ecology", that was funded initially by the CSIRO. He was elected a Fellow of the Australian Academy of Science in 1961 and, on the resignation of Professor W.P. Rogers from the Chair, was appointed Professor of Zoology in 1962, where he remained until his retirement in 1972.



H.G. Andrewartha (1907 - 1992)

During this period in the Zoology Department he became concerned with postgraduate supervision and undergraduate teaching and published "An Introduction to the Study of Animal Populations", a text for the use of senior undergraduates. This work led him farther from his original field, and although making use of insects often in postgraduate studies that he supervised, he became entirely concerned with the notions of populations, be they insects, kangaroos or fish.

After he retired, Andy spent some time as a consultant with the Division of Wildlife of CSIRO and it was during a motor trip from Canberra that he suffered a severe stroke that left his left arm paralysed. But his interest in ecology did not flag and he began, again in collaboration with L.C. Birch, a major revision of their theory of animal ecology. The result was "The Ecological Web" (1984), a book that again received critical acclaim in the ecological world.

Many honours were bestowed on Andy by learned biological societies. He was elected the founding president of the Nature Conservation Society of South Australia, a solidly ecological group. He was awarded the Clarke Medal of the Royal Society of NSW, the Syme Medal of the Royal Society of Victoria and the Verco Medal of the Royal Society of South Australia. In 1987 the Australian Ecological Society awarded him its Gold Medal and in 1988, at the age of 81, the American Ecological Society nominated him "Eminent Ecologist", an award with which he was greatly pleased.

Andy died at the age of 84, after a long illness and is survived by his son and daughter. He left behind a large number of collaborators and former students who will remember a kindly humorous man of great integrity, devoted to understanding the workings of the biological world and the dissemination of that knowledge through writing and teaching.

His family requested that those who wished to pay tribute to his memory might make a donation to the Australian Ecological Society, through: The Secretary, Australian Ecological Society, PO Box 1564, Canberra, ACT 2601, to be used for the assistance of students.

T.O. BROWNING
Adelaide

PRESIDENTIAL ADDRESS
Hobart, February, 1992.
Dinah F. HALES

GRAVY TRAINS AND BAND WAGONS

On being asked to stand for the office of President of this Society, one's first reaction is a sense of amazement at being considered worthy of such an honour. The second is the horrifying realisation that the honour brings with it the requirement, two years hence, to produce the PRESIDENTIAL ADDRESS. For two whole years, the President is accompanied by a black cloud that descends at the most inappropriate times. The black cloud is inscribed in livid white with the question, "What on earth can I talk about?" On closer inspection of the cloud, the profiles of past presidents can be recognised, and the words, "Distinction, Wit, Intellect, Culture, Humour." Eventually, a point is reached where one realises that there is no possible way of emulating these predecessors, and the cloud, though still black, recedes to a distance at which their profiles are no longer clearly recognisable. The Presidential Address then becomes an opportunity for the President to put forward personal concerns and views, just for once without interruption, and the views will properly be as diverse as the presidents themselves.

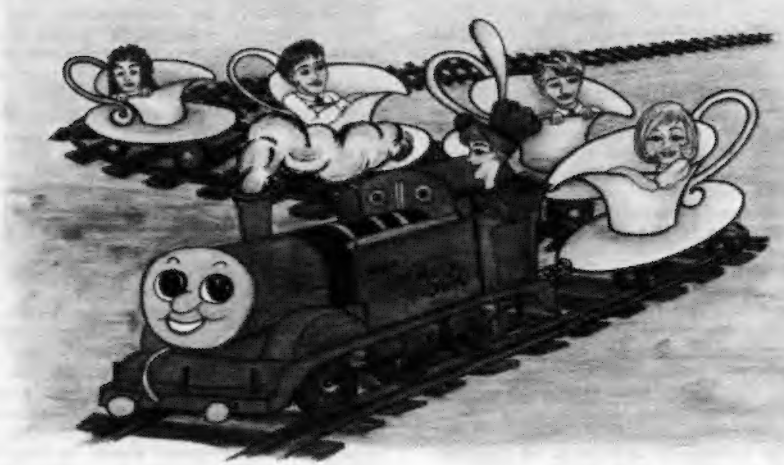
Some of my concerns, as befits a university teacher, are related to science as a career, scientific training, and science as it is practised and administered in Australia today. Hence my title: GRAVY TRAINS AND BAND WAGONS. The capture of both of these mythical vehicles is necessary for the successful development of a scientific career. Perhaps I should qualify my use of the term "gravy train" - it goes back to a very good piece of advice given to me early in my scientific career, "Don't get off the gravy train!" meaning simply that I should not resign from my hard-won job in the event of marriage, offspring, etc. The term gravy train is also used in a pejorative sense, but that sense is not intended here: the gravy train is simply meant to stand for a source of income, i.e. a job, in science. It's scarcely necessary to convince this audience that science is not a source of easy money.

So I will spend some time this morning on the problems of the science gravy train from several points of view - is it a desirable and exciting means of transport? how can it be caught? how can we, as professional scientists and teachers, ensure that the right people catch it, and that they have the equipment and skills to make the most of their opportunities?

Let us start with the first question. Is the science gravy train a desirable and exciting vehicle? Those of us who are on board would probably agree that it is, even if the moments of excitement seem to be hidden increasingly behind mountains of paper and red tape. Or are there some among us who regret our initial choice and wish instead that they had become doctors, plumbers, estate agents, accountants or orthodontists? (Having just received an account from one of the latter, I asked my students why they hadn't chosen to be orthodontists. The reply was percipient: "because it would be boring.") My guess is that most of us who have secure careers in science would say the same: some confirmation of the viewpoint can be seen in the high proportion of entomologists, at least, who see retirement not as an escape from work, but as an opportunity to engage

more intensively in the exciting bits: research on insects. School leavers, however, do not necessarily see it this way. They see science as an uncertain and ill-defined choice, with questionable rewards in either prestige or financial return. How often do we see our very best Higher School Certificate achievers nominate science as their first preference? It is much more likely to be medicine or law. Indeed, young people who show ability and interest in science are often derided by their peers. "Science? anyone can get into science. Why don't you do medicine?" In the U.S.A. there has been a dramatic drop in freshman interest in science over 25 years (Green 1989) and Australia is no different - or so one would have said, apart from a report based on Western Australian data, where a rise in interest in science and

they find difficulty in understanding lecture and textbook material, or demonstrating their understanding by oral or written means. These deficiencies are compounded by a lack of career goals and a lack of understanding of the steps required to reach their objectives. Of course it is not entirely appropriate to blame either the students or the schools for these deficiencies, tempting though it may be to do so. Attracting the best graduates to secondary teaching continues to be understandably difficult, and some rather unexpected convolutions of fact appear to be retailed. At tertiary level, the universities have been fighting a losing battle against the federal government's persistent program during the 1980s for destabilising this sector, in particular the homogenisation of the binary system (universities and CAEs) and the



engineering is apparent since the mid-1980s, at the expense of "business studies". More importantly, this increase is shown also among the top 1000 students (Wood & Leahy 1991). The authors suggest that the trend is likely to be similar across the country; as an outsider I'd suggest that Western Australia may be completely different from the rest of the country.

Entry requirements to the various faculties have given cause for some alarm to those of us involved in science. While less than the top 1% of HSC candidates (and remember this means candidates: nobody fails) qualify for medicine, the top 45-50% have been acceptable into science or agriculture. This means that the majority of the first year intake has one or all of the following problems: poor numeracy, a poor grasp of concepts in physics and chemistry, and at least equally seriously, a poor grasp of language and communication skills, so that

insistence that universities accept more and more students with inadequate staffing and resources. Let me demonstrate how this can affect the quality of education, surely the basis for whatever prospects we may have of becoming the "clever country". At Macquarie, in 1990, faced with burgeoning numbers in first year biology, we decided to save some academic staff time by abandoning our previous and very successful format, in which each group of 15- 25 students had a single tutor for their practical work for the whole semester. Instead, virtually the whole of the staff was pressed into service to teach a particular topic, and to repeat the same class morning and afternoon over a period of a fortnight. It was not a very pleasant experience for either the teachers or the taught. Because of this impersonal treatment, the students lost any motivation that they might initially have had, and in turn antagonised their teachers, who in their turn

failed about 60% of the school leaver intake. You may rest assured that this was not done out of a spirit of vindictiveness. The attitude of the students is illustrated by this exchange. "How about getting out your microscope and looking at the slide?" "Oh, no. I'm not going to. He's looking at it for me." It's experiences of this kind that make you wonder about the functions of a university. Fortunately a return to the previous system, or something like it, in 1991, produced a much more enthusiastic group of first years and a much more acceptable pass rate, despite a further jump of 25% in the number of students enrolled in the School. The trade-off, however, was an approximate halving of the face-to-face teaching and practical work undertaken by the students themselves. What are the best answers? Should the universities be providing remedial teaching in their limited class time? How can they at the same time extend the best students? (And despite what I've said, the best are very good indeed). In this context, an interesting initiative has been undertaken by the University of N.S.W. and also by the School of Mathematics at Macquarie. Both of these have instituted "advanced" courses, requiring a higher entry score. It is too early to say whether these will reverse the tendency to regard science as a second rate choice, but I am all in favour of recognition of merit and achievement, and giving good students goals to achieve and rewards for achievement. A little bit of elitism is no bad thing (see also Baklien 1992). A footnote to this paragraph is the publication of the 1992 tertiary entrance ranks, which indicate increased scores needed for entry into science: at Macquarie (a middle-ranking university) it has gone up from 54 to 67, a considerable improvement, but still behind what is required for entry into the Bachelor of Sport Science at another of the local universities.

I don't have complete answers, of course, to the problem of turning out worth- while graduates from poorly qualified students. But I can make a few suggestions. Before doing so, however, it may be useful to consider some of the constraints on university teaching. It is well-known that most academics have no teacher training. Most develop their style by imitation - picking out the best aspects of the lecturing or tutoring style of their own mentors or colleagues, and abandoning the worst, and we would all agree that there has been, in the past, plenty to abandon! Most are also influenced by student input. It is particularly salutary to have plenty of mature age students. They are not there to waste their time and are quick to let you know if you are guilty of any unclear communication.

While it is possible to develop an acceptable style of lecturing and tutoring/ demonstrating by imitation, the broader context of teaching practice tends to escape down the holes. How does one decide on content? How does one balance facts, concepts, investigative work and modification of attitudes and behaviour? It is certainly not enough to follow the patterns of the past, to follow one's own personal research interests in teaching, or to run a practical program almost exclusively determined by what will fit into a three or four hour weekly timeslot and a 13 or 14 week semester. (Sorry, I forgot. We can only afford 10 week semesters for practical work now). A vast amount of academic staff time is spent on supervising students' practical work. Surely it is worth spending a bit more to consider quite seriously what the students should gain from it. Since science is a discipline based on both skills and knowledge, any reduction in practical work must run the risk of turning out less skilled graduates. To get a first seat on the gravy train, skills are probably even more important than knowledge. Perhaps we genuinely can decrease the amount of expensive time spent on students' practical work. I think it's more likely that, using the same amount of time, we could actually be more effective by redesigning the practical work towards a series of goals that all students clearly understand and that all are expected to achieve. It is important for both students and teachers that the time is well spent and that students learn skills and attitudes that will make them into competent and versatile scientists in the field or laboratory or both. This is not too hard to say, and may indeed sound obvious, but there are all sorts of levels at which it could be accomplished. Also, there is a yawning gap between saying it and actually putting it into practice. One of the difficulties is our lack of prescience - how can we tell what skills will be required in the 21st century? Any of you who may have a suitable crystal ball owe it to the community and the future to divulge its secrets now. In the absence of such assistance, I believe that perhaps one of the most important contributions we can make is to influence the attitudes of our students - to interest them in the highest levels of achievement, to persuade them to take some responsibility for their own education, and to encourage a respect for scholarship and integrity.

It is also recognised that demands on academic time are ever increasing, and this is probably the most important impediment to any long term or innovative plan. In particular, the balance between teaching and research has tended to swing to the research side. Competence is measured in terms of papers published, external funding obtained, interaction with industry. Despite lip-service to the contrary, teaching excellence rates well below research productivity in the appointment, promotion or study leave stakes at the universities. Attitudes to this balance cover the whole spectrum, from those who believe that teaching is the only proper function of an academic to those who regard it as a necessary but evil interruption to their research, a responsibility to be discharged in the minimum possible time. The problem is particularly acute for the staff of the former CAEs, institutions with a tradition based on

teaching, but now trying to graft on a research ethos equivalent to that of the older universities. The newer staff often come with a background in research, but struggle with teaching loads up to double those of the older universities. If they can additionally run research programs they deserve our sincere admiration. It has recently been argued that there is no necessary conjunction between research and high-quality teaching. I disagree most whole-heartedly and think most biologists would. The rate of change in our discipline would be inconceivable to those in most other fields of endeavour. Research keeps us constantly aware of the rate of obsolescence of the printed word, and enables us to stimulate interest in current research activity. But more importantly, university research provides an environment for the training of the new generation of scientific research workers. It would be quite impossible to undertake this role in the absence of established research programs. Academics need, however, to guard themselves against any complaint that their teaching activities are in any way secondary to their research. In fact, I have come to the absolutely radical and no doubt derisory conclusion that teaching is the most important thing we do.

I am pleased, in this context, to have seen the AVCC's Draft Code of Practice for University Teaching (1991). It encapsulates many of the points I have alluded to: for example, the importance of teaching, coherence, relevance, the need for advising, transmission of values, challenge for all students. It's a most important document and I hope it receives more attention than most of the paper that comes in brown envelopes from the administration, and that it is not simply dismissed with the comment, "I suppose they're just telling us to do all the things we're doing already." It's like the old joke about, "How many social workers does it take to change a light bulb?" "Only one, but the light bulb's got to want to change." There is certainly room for improvement in university teaching - there always has been, even in the best departments, but the current crisis in over-crowding makes it absolutely imperative that we rethink both objectives and methods. We are training people for the challenges of the 21st century. No-one can doubt that the challenges will be gigantic. How will posterity judge us?

I have spoken so far mainly in the context of the average or weaker students, who will need plenty of help if they are to catch the gravy train and make worthwhile contributions. For the best students, those who aspire to careers in research, the pathway is well-established, though they need to be told. Honours degree, PhD, postdoctoral fellowships in the laboratories of high-profile, well-funded researchers overseas. Lots of papers, powerful friends, mastery of up-to-date techniques. Short term and we hope ultimately long term employment in exciting and relevant research. Even after the 10-12 years program of training, a suitable job is not assured. As we know, our own field offers limited opportunities. How much more difficult is the path of the next layer of graduates, those with higher than average competence but without honours or a PhD. For them, the pathway may include a part-time Masters degree, and the struggle to gain the poorly- paid temporary (or even voluntary) work that will enable them to claim experience in their field of interest. I believe that it is a responsibility of those who use short-term or voluntary workers to ensure that they are given honest advice on their prospects of obtaining full-time or long-term employment in that particular field, and that they are given genuine opportunities for acquiring new skills or knowledge that will increase their future employability. The problem of "qualifications creep" is well-recognised in science - jobs which 15-20 years ago required a pass degree now require a PhD, and those that required a technical college certificate require an MSc. It is difficult to imagine the frustration of well-qualified people when they are unable to use their training and knowledge in any autonomous or fulfilling way. Voluntary labour poses a special dilemma: programs should be funded to include full labour costs. If they are not, the choice lies between allowing them to collapse, or drawing on the supply of eager volunteers, who rightly or wrongly believe that the experience gained will help them towards paid employment. It is up to us to see that this carrot is not cynically presented. In short, it is an obligation that we should all accept, to provide continued opportunities for those under our supervision to undertake additional training and to make satisfying practical and intellectual contributions to the projects in which they are engaged.

Before leaving the problem of catching the science gravy train, let me reflect briefly on the sex ratio of the passengers. It is clear that the ratio is strongly male biased. This is relevant to science in general, and also to this Society, in which I estimate that less than 20% of the members are women. But my comments are not directed only to that small proportion of the potential audience. Some of you are women, and others possibly live or work with women. Let us not say, therefore, that any discussion of the subject is irrelevant to most of the Society. The sex ratio exists despite the fact that women now make up more than 50% of the overall undergraduate population, and more than 50% in many third year or honours courses in biological subjects. The imbalance exists, furthermore, despite the often superior achievements of women students at undergraduate level. The higher one climbs the academic or governmental (science) pyramid, the lower is the representation of women. There are, of course, a few outstanding exceptions - one of the most recent and most shining examples is the appointment of Professor Adrienne Clarke as the first woman chairman of CSIRO. In announcing her appointment,

the Minister for Science said, "Hers is the kind of career that young Australian women can look up to and hope to emulate." And indeed it is: her early training included, perhaps somewhat unusually for women at that time, the overseas postdoctoral work and mobility that is generally accepted as necessary today in the establishment of a professional scientific career. Let us ask, however, in the title of a previous study, "Why so few?" (Cass et al. 1983). And why, in the 1990s, does such an appointment rate a headline relating to the gender of the appointee? Ask yourself further, how many women are heads of government science related departments? How many are or have been chiefs of CSIRO divisions? How many are Fellows of the Australian Academy of Science? How many are there at higher academic levels in the science schools or faculties of our 35 universities? Let me give you two limited answers. The Australian Academy of Science has a fellowship of about 250. Of these, only seven are women. At my own university, there are 21 professors in the science schools. Just two of them are women (one holding a personal chair). At associate professor level, there is one woman out of a total of 25 (Macquarie University Calendar,1992).

Of course there are some women. But what happens to the others? Are they all victims of the conventional domestic role? Even what is intended to be a temporary lapse into domesticity can result in missing the gravy train altogether. A more common finding is that, now as never before, the gravy train is moving so fast that it is impossible to reboard after any brief stopover, whether the interlude is intended for travel, marriage or childrearing. I am not sure that all young scientists, especially women, are given this advice. No-one tells them, "You can reach the top, and these are the steps you have to take, and these are the pitfalls you have to avoid." If this sounds a little like "Pilgrim's Progress", it is not entirely accidental. Let us try to avoid both the Slough of Despond and at least some of the traps of Vanity Fair. Things are changing, though. Many of today's best young women graduates can see quite clearly what they need to do to reach their objectives. The most clear-eyed of all recognise that motherhood, no matter what the childcare arrangements, is going to diminish their prospects of reaching their full career potential. There is nothing quite like coming home to work on your paper and finding that your social and educational obligations for the evening are to lead an expedition to the local library for two assignments, run up a batch of fund-raising patty cakes and whip up a rat costume for the primary school play, not to mention the routine domestic tasks. Of course the latter are beginning to impinge on both partners in the two-career family, though personal observation suggests that they are often asymmetrically distributed. If, however, you decide to emulate Professor Clarke's career, which includes not only scientific distinction, but also family life, you should be prepared for the rat costumes.

Amalie Dietrich - a remarkable collector who travelled alone to Australia in the 1860s.

At one stage I considered taking as my theme for this address, "Women Entomologists in Australia's Past". Fortunately, before I had proceeded very far along these lines (only far enough not to have discovered any) I read Pat Marks's biographical chapter in the new "Insects of Australia" and realised that, if, like her, I restricted discussion to entomologists who were no longer alive, my field would be fairly small. One account, however, caught my fancy, and I decided to find out a little more about Amalie Dietrich, the German woman who came alone to Australia in the 1860s, and undertook extensive collecting trips in Queensland over a period of 10 years. Before proceeding, let me interpolate that if you read the recent attack on Amalie in The Bulletin (Monaghan, 1991), I hope you regard it, as I do, as an extreme piece of sexist sensationalist journalism based apparently on third hand hearsay, and I will not discuss it further, but rather return to Amalie's remarkable achievements. How could they have come about in the conservative atmosphere of 19th century Europe? To my amazement, the Macquarie library had a biography of Amalie, written by her daughter (Bischoff,1917), though unfortunately for me, it was not only in German but also in Gothic print. I therefore concentrated my limited German on the eternal problems: education, marriage, childcare and funding. Amalie's father was a leather worker, and her education was limited to village school level. Her scientific

training came from her husband, Wilhelm Dietrich, whom she met while he was on a collecting expedition near her home. Dietrich came from a professional family, and had been trained as a chemist, but preferred biological fieldwork and collecting. He found in Amalie an excellent student and technician, and they made long collecting trips through Europe, while Amalie's parents kindly ran the household. These trips continued after the birth of their daughter Charitas, but Amalie's mother died when Charitas was about four years old, and friction began to arise in the marriage, partly because Amalie "was ill-equipped for domestic tasks", (I warmed to Amalie at this point) and more so because she was continually torn by the conflict between "the job" as her husband's field and lab assistant (as we would now call it) and the emotions and responsibilities of motherhood. Eventually, she separated from her rather selfish husband, and, lacking sufficient financial support, she approached various collectors in Hamburg seeking to sell her material. It seems that the opportunity to come to Australia arose quite unexpectedly. Amalie had sold some herbarium collections to a businessman, Dr Meyer, and had formed the custom of visiting his family. He suggested that she contact Caesar Godeffroy, a fabulously wealthy shipowner and trader, who had his own private museum and already employed collectors in the Pacific region. The recommendation seems to have sprung entirely from the excellent standard of preparation of Amalie's material; time and again in the letters that form a large part of the book, there is praise from professional and amateur natural historians for her collections. Meyer's suggestion took Amalie by surprise. "But would he employ a woman?" It seems that the answer was yes. "Wild, fantastic pictures passed before her mind: Duke of the South Sea? - Australia? - Tropical landscapes! Palms! A crying child, - her child!" One suspects that the economic imperative and the former fantastic pictures played equal roles in her decision to take up the contract. Provision for her daughter Charitas, then aged 14, was something of an afterthought, as least as recounted by Charitas. The problem was solved serendipitously by Frau Dr Meyer's incredibly generous offer to care for Charitas, whom she had never met, and off went Amalie for 10 years fully funded collecting in Australia and the islands.

Our first hand knowledge of her adventures in Australia depends largely on the letters she wrote home to Charitas: letters that were interesting and affectionate, but according to Charitas, far too infrequent - "Wie seltern schreibst Du mir!" And with only 11 letters in 10 years, despite the slowness of the mail, we would have to agree that Charitas's remark was not unreasonable, although Amalie's rate may be about average for scientific correspondents.

This is not the place to detail Amalie's experiences in Australia. Her interests ranged from anthropology through the vertebrates to the insects and lower invertebrates, and across the whole range of macroscopic plants. What she collected was partly predicated on Godeffroy's directions, and partly on her own initiative. Insects seem to have been a relatively minor component.

Then, as now, biologists failed to fit the normal societal expectations. One of her biographers (presumably not a biologist) remarks that "Completely unconcerned about personal comfort and appearance, she must have seemed unusually eccentric." And Charitas herself, reunited with her mother, ventured to ask, "Wouldn't you like to tidy yourself up a bit?" thinking to herself, "The Doctors had said my mother was a heroine. Could a heroine look like this?" Amalie was wearing grey canvas shoes with holes in them. I can't help feeling that she would have fitted very well into present day biological circles.

Her achievements, for her time, were outstanding, but they depended entirely on patronage, first from her husband, then Meyer, and then Godeffroy. In the broader sweep of 19th century science, the barriers still existed. When Amalie later wished to attend an anthropological congress in Berlin, she was denied entry, "because women are excluded." Eventually, however, word reached the chairman, who knew of her work and gave her a place of honour at the meeting.

If the exclusion of women from scientific meetings comes as a surprise, it should not. Fifty years later, Virginia Woolf could still write, with wry wit, of how women were not permitted to walk on the Oxbridge grass and were excluded from college libraries (unless accompanied by a Fellow). I hope you have all read "A Room of One's Own", partly because of its inimitably beautiful style, and partly because its theme, the practical difficulties and barriers of prejudice faced by women novelists in the 1920s, could well be re-written in terms of women scientists today. Before you say, "What nonsense! there are no barriers of prejudice against women today, and they bring their practical difficulties upon themselves", let me just give you a few examples from my own career and those of younger colleagues.

The present cohort of senior scientists was educated during the 1950s and 1960s. At that stage, even at top selective girls' high schools, it was not possible to do physics for the leaving certificate. Hence the girls, apart for a fortunate few, were immediately relegated to third class status in the compulsory first year university physics, where they were regaled with a series of examples related to the behaviour of billiard balls. Guess what? Most of us had never seen a billiard ball, because "Ladies are not allowed in the billiard room". Our relegation in chemistry was more subtle, but recognisable nevertheless. Instantaneously, a wide range of scientific options was closed off. Perhaps with foresight, good advice and endless effort and self-assurance, one could have risen

above these initial setbacks and found a career in the physical sciences. I cannot think of any of my contemporaries who did so. It need scarcely be added that a truncated training in physics and chemistry reduces one's options in biology (including entomology). Could it be that this is one of the main determinants of the sex ratio on the gravy train? And have things changed since 1959? Certainly they have. Even five years later, my younger sister was able to do physics, at the same school. The fact that she went on to be a mediaeval historian is somewhat enigmatic. The N.S.W. Department of Education, however, as recently as 1989, was still concerned about factors which continue to impede the participation of girls in science and technology. After eight years of a Non-Sexist Education policy, there had been little practical impact and many teachers had still not even read the policy. The battle for equal access is far from over. Even after formal education is complete, there remain the practical problems of fitting in with spouse's career and/or with childrearing, but these are too familiar to most of us to be worth mentioning, and have been discussed in detail by Cass et al. (1983).

What about prejudice? I can truthfully say that I have recognised remarkably little during my career, at least among biologists. EEO has seen to it that applicants for jobs are no longer asked, as I was, "Have you got a boyfriend?"* Indeed EEO has ensured a level of reverse discrimination, insofar as every committee must have representation of both men and women - since there are far fewer women than men at senior levels, they get far more committee work per head. In fact I was amazed to find that Macquarie University has a member of staff whose sole function is to organise this, as the following advertisement shows:

"Duties will include keyboard work and the distribution of the genders, minutes and reports for a large number of University Committees."

Being the statutory female on committees can have its funny side, although the comedy is sometimes tinged with black. Consider the following examples. I was appointed to a Selection Committee to choose a professor in another science school. Details of the composition of the committee had been circulated to all members, but when we assembled before the meeting, a member of the school concerned took it upon himself to introduce everyone. As he proceeded around the circle, I realised that although we had both been on the university staff for 20 years or so, we had probably never spoken to each other. So I prepared to help him with the introduction. I needn't have bothered. He passed straight over me and went on to the person on my left. It gives you a strange feeling of invisibility. Then there are the men who will come out of a meeting and tell you, "What you said in there was really quite sensible". And there are those who cannot discuss any question except in terms of sporting metaphor. I am reasonably at home with the concept of the applicant who "has the runs on the board", but when faced with a choice between the candidate coming from left field and the one coming from right field, I wonder whether we should not re-advertise and try to get the pitcher or catcher. My favourite sporting metaphor of all came from a professor on his retirement: "The ball is in Australia's court now. It is up to our scientists to pick up the ball and run with it, or they'll be beaten to the finishing line."

*After I gave this talk, one woman after another came to tell me of much worse examples of intrusive, sexist and insulting questioning that continues even now: e.g. "What kind of contraception do you use?"

To return to the more serious side, it is possible to cite some quite specific examples of discrimination against women, and the curtailment of excellent research by structural impediments or downright prejudice. One example concerns a young woman who developed her career by overseas postdoctoral work - took all the right steps -and had a substantial background in molecular and population approaches to the genetics of disease. She even caught an excellent band wagon, one would have thought, in developing a project on AIDS. But can she get a research grant to appoint an assistant to analyse the samples, already collected and sitting in the freezer? No, because she has chosen to work part-time while her children are very young. Her two or three days a week of single minded research would undoubtedly return more value than the fragmented time of a full-time academic. In a similar but separate case, a grant reviewer, under the cloak of anonymity, had the gall to recommend rejection of a grant application because one of the applicants "needs to sort out her domestic situation." What patronising, paternalistic nonsense! Didn't he think she might have tailored the application to fit her other commitments? So far as I can see, the only way to sort out the domestic situation (i.e. children) is to take Amalie Dietrich's path and leave them permanently in the care of others, preferably in another country. This is seldom feasible. To add insult to injury, in this case, 1. the granting body rejected the proposal, 2. the same granting body offered both co-applicants research fellowships, on the basis of their excellent research records, 3. it would not let them take up the fellowships, because the grant had not been awarded. It seems quite crazy to support the 10-12 years training required to launch an independent scientific career, and then, through structural inflexibility, deny women the opportunity to make a worthwhile return for their training. Imaginative and progressive solutions are needed to remove impediments to productive research. For example, we find there are constraints on the mobility of both men and women, in considering new appointments in other cities or countries, and in accepting opportunities

for overseas study. I believe this is related to the two-career status of many scientific or academic families, and is particularly important while families have school-age children. It is often not feasible for both partners to travel to the same destination at the same time, and it seems distinctly selfish for one to go while the other is left to deal, for any length of time, single-handedly with family and career. Perhaps an alternative to study leave in this case would be to support visits by overseas workers in the relevant areas, to encourage new cooperative research programs. Study leave is also, of course, exceedingly costly, with travel grants set at levels way below the cost even of the airfare, let alone living expenses. One of my colleagues pointed out that the grant would get him about as far as Singapore, and inquired whether the University wanted him to walk the rest of the way to the British Museum. Of course it doesn't - it wants you to pay the rest yourself, as it wants you to pay for most conference expenses, publication charges and an ever-increasing list of other items. ARC instructions used to contain the quaint old-fashioned phrase "on the house". Let me assure you, nothing is on the house, and the institutions remove x% of any grant before you even see it. It is not permissible to budget for this impost. Contrast this with the public perception of the perquisites of academic life!

My title included band wagons as well as gravy trains, and I have said very little about them. The band wagon, of course, refers to the phenomenon of fashion in science. The word "fashion" suggests something trivial, but in science, it is common for the fashions to be enormously important but intractable problems. It is characteristic of a band wagon that for a brief period of time, it is possible to obtain funding for almost any project that contains the magic word in the title. Then disillusionment or fickleness determines that the band wagon should be replaced by a new one, whether or not useful work remains to be done on the first. The same applies to techniques - if the band wagon for the technique has collapsed, it may be difficult to get support for your project, no matter how useful the technique may be in the context, or how expensive it may be to replace it. Of course I'm exaggerating, but I don't believe that science should be constrained in this way. Do you think it is possible to build a band wagon single-handedly? Could there be any relationship between band wagon building and a tendency to claim too much for one's project? Science needs, now as ever, to maintain its credibility, and this means avoiding the temptation to overstate the importance, feasibility or practical value of your work, or to conceal possible theoretical or practical difficulties. Some well-known band wagons have come to grief from overstatement taken as far as the deliberate falsification of data. Fortunately they are completely unrelated to our own discipline.

Administrative band wagons can also exist, and perhaps affect us more seriously than scientific ones. They generally take the form of some great new idea at federal or state government level for the destabilisation of institutions, and may include any of the following. 1. Forced amalgamation of existing institutions. 2. Arbitrary transfer of staff or functions between institutions. 3. Proposals for the relocation of existing institutions. 4. Proposals for the use of quantitative performance indicators. 5. New structures that turn out to be ephemeral (e.g. Key Centres). All these disruptive forces have similar results: More paperwork, often wasted, more meetings, more reviews (up to

eleven in eight years for one department), lowered morale, internal conflict, territoriality, and finally, loss of scientific productivity. Science needs security and stability if the long-term problems are to be tackled, let alone solved. Scientists need to be able to spend uninterrupted time reading and planning, as well as actually doing science. Not for a moment do I want to suggest that science or institutions should be static. To be static is to be dead, but there must be ways of progress and liberalisation that are less disruptive than those visited on many of us lately. It really rubs salt in when the government, having forced the changes, later admits that things were better originally.

Throughout the turmoil of the last decade, the strongest unifying force for our own profession has been this Society. It is a centre of stability and a network for communication. We all benefit from what it offers and we all owe it our support. Long may it prosper.

In this address, I have barely mentioned entomology. Perhaps that is because, compared with most of you, I am not an entomologist. It is also because I have the great good fortune to work in one of the few truly integrated schools of biological sciences in Australia, and arising from this is a firm conviction of the value of interaction between the different branches not only of biology, but of science as a whole, and the need to turn out graduates remarkable for their breadth of knowledge, their mastery of skills, and their versatility. In conclusion, I would like to make three wishes on behalf of us all. The first is for stable and adequate funding. The second is for institutional stability. The last wish is for about three times as many hours in the day, so that we can do all the interesting and valuable work we really want to do, and do it as well as it should be done.

Bibliography (partial)

Anon. (1991). Oh boy, it's a girl! (At last!) CoResearch, 345:1.

Australian Vice Chancellors' Committee (1991). Draft Code of Practice for University Teaching.

Baklien, A. (1992). Challenging education trends. Search, 23: 12-13.

Baldwin, P. (1991). Higher education: quality and diversity in the 1990's.

Bischoff, C. (undated). Amalie Dietrich. Ein Leben. G. Grote'sche Verlagsbuchhandlung, Berlin.

Bunyan, J. (1965) The Pilgrim's Progress. Penguin Books, London.

Cass, B., Dawson, M., Temple, D., Wills, S., and Winkler, A. (1983). Why So Few? Women Academics in Australian Universities. Sydney University Press, Sydney.

Gilbert, L. A. (1972). Amalie Dietrich. Aust. Dict. Biogr. 4: 73.

Green, K. C. (1989). A profile of undergraduates in the sciences. American Scientist, 77: 475-480.

Huie, S. F. (1990). Tiger Lilies. Women Adventurers in the South Pacific. Angus & Robertson, North Ryde.

Monaghan, D. (1991). The Bulletin, Sydney, Nov. 12: 30-38. (See also Letters, The Bulletin, Sydney, Dec. 12, 1991)

NSW Department of Education (1989). Girls' Education Strategy. NSW Department of Education, Sydney.

Schibeci, R. (1991). Science and technology - a clever career choice? Search, 22: 286-288.

Wood, D. and Leahy, J. (1991). The swing back to science. Search, 22: 288-289.

Woolf, V. (1945). A Room of One's Own. Penguin Books, Harmondsworth.

Hickman Collections Move North

The name Hickman is well known to all students of Australian Arachnids. Professor V.V. Hickman was a lecturer in Chemistry at Launceston Technical College from 1921 to about 1930. Aside from his teaching duties, he devoted his spare time to a private study of a range of animal groups, but with a special interest in spiders and harvestmen. He often kept living spiders at home to observe their behaviour, and made frequent collecting trips, usually in the Launceston area. His interest in these subjects continued after he transfered to a lecturing position in the Biology Department at the University of Tasmania in Hobart. The result was a long series of publications dealing with the taxonomy and biology of many different groups of Australian animals, especially spiders, with special emphasis on the fauna of Tasmania.

Professor Hickman's interest in terrestrial arthropods was continued by his son John, who also worked at the University of Tasmania, teaching Biology and Parasitology. John Hickman developed an interest in both the freshwater and terrestrial faunas of Tasmania, and began a project to catalogue them, a project which is still continuing in the University's Zoology Department. Following his retirement, John realised that the collections created by himself and his father would be most valuable to the nation if they were housed in institutions that are conducting taxonomic research on arachnids and other terrestrial arthropods. He has therefore generously donated the collections to a number of Australian research institutions. The purpose of this note is to publicly acknowledge these donations, and to document them to ensure that the collections are used to the maximum possible degree.

Three kinds of material were involved in this series of donations. First, a collection of Arachnida assembled by V.V. Hickman has been donated to the Australian Museum, Sydney. This material forms a substantial

addition to the Museum's important collection of Tasmanian arachnids. The combined collection now contains 227 type specimens, of which 148 are V.V. Hickman types. Most of the remainder also come from the Hickman collection, under the authorship of several other workers, including J.L. Hickman. Of particular interest are the many tiny litter- and moss-dwelling spiders unique to southern regions, including families that were unknown until they were described by Professor Hickman. Overall, the collection provides an excellent representative sample of the Tasmanian spider and harvestman fauna, and includes specimens used by Professor Hickman in his life history and behavioural studies. It also has considerable historical significance as a record of the scientific career of V.V. Hickman, the first of the modern Australian arachnologists. By mid 1992 this collection will be fully processed, and will be accessible via the Australian Museum's Arachnology collection database.

The second major part of the collection is a library of reprints from the personal library of V.V. Hickman. The collection occupies 130 filing boxes and includes copies of over 3,000 different publications. They cover a very wide range of subjects, and give a clear indication of the breadth of their owner's interests. The greatest strength in the library is in the taxonomy of spiders, and some rare and important works by famous authors such as Petrunkevitch, Chamberlin, Bonnet, and Simon are featured. It also includes many important works on other arachnid groups such as mites, scorpions, and harvestmen. There are also many papers of a biographical and historical nature, a group dealing with the use of terrestrial arthropods in education, and many papers of a more general nature, on ecology, biogeography, and evolution.

The portion of this library that deals with the taxonomy of insects, arachnids, myriapods, and related groups, has been incorporated into the reprint collections at ANIC, Canberra. The arachnid literature is an especially valuable addition to ANIC's resources. Although there are no immediate plans to increase the level of arachnological research in Canberra, visiting arachnologists can now be confident that most of the important literature on Australian spiders and related groups will be at their disposal when they visit ANIC to examine its collections.

The literature dealing with the taxonomy and biology of vertebrates and marine organisms has been transfered to the Australian Museum, Sydney, and several hundred papers on ecology and genetics have been donated to the Department of Botany and Zoology at the Australian National University.

The third important set of collections comprises specimens collected by J.L. Hickman and others during a series of surveys that was conducted during the years 1973-1978. The best known was the Lower Gordon River Forests Survey, funded by the Tasmanian Hydro-Electric Commission. Other surveys in northwestern and northeastern Tasmania were designed to provide inventory data and measure the effects of forestry on the fauna, especially in rainforests. This work was funded mainly by the Australian Biological Resources Study, and was also supported by Australian Newsprint Mills, Associated Pulp and Paper Manufacturers, and Australian Paper Manufacturers. This material is stored in high quality glass vials, beautifully labelled, and sorted to a remarkable degree of detail, mainly thanks to the efforts of Lionel Hill. The specimens are well supported by a series of data books providing coded indexes to sample numbers, vial numbers, taxa, and habitats. The material now in ANIC and the Australian Museum comprises over 4,000 such vials containing over 28,000 specimens. They include soil, litter and moss samples of insects, arachnids, myriapods, and a range of other arthropod groups. The material in ANIC is particularly rich in Hemiptera, including good collections of Peloridiidae and Enicocephalidae, which are rarely represented in collections. These collections are a particularly valuable resource because they come from areas that are inaccessible and rarely visited by collectors. Some of them have already been incorporated into revisionary works on the Tasmanian and Australian faunas. The non-acarine arachnid collections housed in the Australian Museum have been entered into the Arachnology database, which has been used to form a catalogue of the spider collections. This information is available on request. The Oligochaeta and Onychophora specimens have been transfered to Dr Tim Kingston, of the Queen Victoria Museum, Launceston, and the Temnocephala to Lester Cannon at the Queensland Museum.

As noted above, the collections from the southwestern Tasmania HEC survey and the Tasmanian ABRS surveys, the circumstances of their collection, and an inventory of their contents, are described in a series of documents. Copies of these will be deposited at the Queen Victoria Museum, Launceston, the Australian Museum, Sydney, and the ANIC.

We would like to express our thanks to John Hickman, on behalf of all the institutions mentioned above, for his thoughtfulness in making these donations. The specimens and literature are in safe hands, and will continue to make a contribution to our knowledge of the Australian fauna for generations to come.

Bruce HALLIDAY,
CSIRO Canberra

Mike GRAY
Australian Museum, Sydney

REPORT ON THE INSECT EXHIBITION AT THE QUEENSLAND MUSEUM

by Geoff MONTEITH,
Queensland Museum, Brisbane

Introduction

From February 12 to March 15 this year the Queensland Museum staged a major Temporary Exhibition on insects under the title "Living with Insects: Friends and Foes". It occupied three whole galleries and was undoubtedly the largest entomology event ever mounted in Australia, attracting more than 75,000 visitors in 4.5 weeks. The Australian Entomological Society assisted the Exhibition with a contribution of $1000 made under its Research Grants scheme. This is the report to "Myrmecia" as required under that scheme. The Society also contributed $1500 towards the production of a full colour educational poster "Insects of Australia - A Guide to the Orders" by the Queensland Museum. This was launched at the opening of the Insect Exhibition and is offered for sale to members elsewhere in this "Myrmecia" with profits going to the Society. The Queensland Museum is most grateful to the Society for its financial support of these insect endeavours.

Origin And Planning Of The Exhibition

The Exhibition had its origin in a feeling by a core group of Brisbane entomologists in 1990 that there was a need to promote entomology by some major "event" which would raise public (and political) perceptions of our science. Various options were explored and eventually the Queensland Museum agreed to stage a special Temporary Exhibition which would be planned and contributed to by the various entomological institutions in Brisbane, including the Museum itself.

Within the Museum a project team was set up consisting of Geoff Monteith (Project Leader), Kelly Cook (Designer and Display Coordinator) and Heather Janetzki (Education and Publicity Officer). Meanwhile, among the external community of Brisbane Entomologists a planning committee was set up which met every month or two during the 18-month period leading up to the opening. This committee was very ably chaired by Bryan Cantrell of QDPI Entomology Branch.

The QM Project Team visited all institutions early in the planning process for direct discussions with entomologists. This was an essential step as it enabled display feasibility to be assessed for many preliminary ideas.

The Project Team produced a draft display proposal document incorporating all these preliminary ideas and this was accepted by the Museum. A final title was chosen for the Exhibition and the QM Graphics staff designed an Exhibition Logo which appeared on all subsequent documents and publicity. An early decision was made that the QM would produce text labels for the whole Exhibition so that uniform appearance was achieved.

Participating Institutions

The various institutions which took part in the Exhibition and the main contact entomologists who attended the planning meetings on their behalf are as follows:

QM - Queensland Museum (Geoff Monteith)
QDPIE - Queensland Dept. of Primary Industries, Entomology Branch (Bryan Cantrell)
QDPIQ - Queensland Dept. of Primary Industries, Quarantine Branch
QDPIFS - Queensland Dept. of Primary Industries, Forest Service (Ross Wylie)
CSIRO - CSIRO Division of Entomology (Angus Macqueen)
QIMR - Queensland Inst. of Medical Research (Ian Fanning)
QDH - Queensland Dept. of Health (Pippi Mottram)
QDL - Queensland Dept. of Lands (Graham Donnelly)
UQ - University of Queensland, Entomology Dept. (Margaret Schneider & Des Foley)
GU - Griffith University, Australian Environmental Studies (Jon Marshall)
CTPM - Centre for Tropical Pest Management

Funding And Sponsorship

It is not possible for the Museum to meet the full costs of mounting large temporary displays which do not charge admission. The Museum's original internal allocation was $4,500. Active soliciting sponsorship funds from external bodies yielded approximately $8,000 in donations. These donations were matched by trust fund subsidy by the Museum bringing the total available budget to around $20,000. Without these generous

sponsorship donations we would have been unable to attempt some of the bolder (and ultimately most successful) elements of the Exhibition.

The sponsors were:

Australian Entomological Society
Australian Entomological Magazine
Entomological Society of Queensland
CSIRO Division of Entomology
QDPI, Entomology Branch
Centre for Tropical Pest Management
Melbourne University Press
QTQ Channel 9
Australian Environmental Pest Managers Association
Tropical Health Program
CIBA-Geigy
W.A. Flick & Co
Southbank Butterfly House
Exopest

Other organisations helped the display by lending or donating goods and services. These included NEC, BytePower, Simpson Restumping, Mt Glorious Biological Centre, Wild-Leitz and Sony.

The Opening And Other Publicity

Sydney naturalist, photographer and TV-identity Densey CLYNE was chosen to perform the official opening at a packed morning function on February 12. She gave a public lecture in the Museum theatre the same evening. This was so heavily attended that an overflow room was set up with her performance piped through on video. The next morning the Exhibition got a good plug when she appeared on Channel 9's morning chat show. This all got the Exhibition off to a good start with the media and we received excellent coverage throughout the display on radio, TV and in the papers.

The Final Exhibition

Mounting the final exhibition was a giant task over the last fortnight before the opening, with many pizzas delivered to the Museum late at night to feed staff labouring on into the wee small hours. More than 25 museum staff were involved including artists, preparators, artificers, electronics technicians, graphic designers, typists, photographers, scientific staff and education officers. The Museum staff learnt a lot about insects. Meanwhile the outside entomologists learned a lot about how a Museum operates; initially rather bemused by the frantic activity they eventually beamed with pride as their ideas, dragged through innumerable committees, slowly metamorphosed into the eye-catching reality of professional Museum exhibits. The components of the final exhibition, with the participating institutions shown in parentheses, were as follows:

1. **The Butterfly Man of Kuranda** (QM). This travelling exhibition features 36 show cases of spectacular tropical insects formed by Frederick Parkhurst Dodd in North Queensland early this century.
2. **Victorian Collector's Study** (QM). A recreation of the sort of room in which a gentleman collector of the era of F.P. Dodd may have tended to his specimens.
3. **Every Australian Butterfly Species** (QM, QDPIE and Private Collectors). This display presented for the first time a synoptic collection of every recorded Australian butterfly species. It was coordinated by Trevor Lambkin and Ian Knight and included specimens loaned from their collections and those of John Kerr, Peter Valentine, Steve Johnson, Grant Miller and Murdoch DeBaar. Specimens were also loaned from institutional collections of QDPI, QM, University of Queensland, CSIRO in Canberra and the Australian Museum. The last species obtained was *Borbo bevani*, represented by one of Waterhouse's original specimens from the Australian Museum.
4. **A World of Beetles** (QM and J. Sedlacek). A geographic presentation of spectacular beetles drawn from the private collection of world travellers, Josef and Marie Sedlacek.
5. **The Beetles of Bellenden Ker** (QM). A biodiversity display showing 1000 species of beetles collected on one expedition to Mt Bellenden Ker in north Queensland.
6. **Butterflies of the Brisbane District** (QDPIE). Two cases of butterflies which would have occurred along now suburban Enoggera Creek at the turn of the century.
7. **Insect Concerto** (QM). A continuously playing slide/tape programme of the calls of katydids, crickets, cicadas, etc. in synchrony with colour slides of the insects themselves. Sound recordings were loaned by David Rentz, Tony Ewart, John Moss and Chris Neale.
8. **Insect Zoo** (QM). A range of living insects including giant cockroaches, phasmids, katydids, ant lions, butterfly and Hercules moth larvae, flower beetles, bull ants, etc. Some specimens were provided by Mt Glorious Biological Centre and CSIRO Long Pocket. Included a "guess the number of phasmids in the cage" competition which attracted thousands of entries.
9. **Plague Locust Diorama** (QM). A recreation of a plague of *Chortoicetes terminifera* created by Rudi Kohout using more than 1000 specimens sent from western Queensland by Dave Hunter of the Locust Commission.
10. **Introducing an Insect** (UQ). a series of Video programs and text panels showing basic structure and physiology of insects.
11. **Insect Identification Maze** (UQ). An interactive maze which kids walked through with a provided specimen making choices concerning its structure until they emerged at a doorway announcing the Order of their specimen.

RIGHT: The official opening of "Living with Insects" was by Sydney author, naturalist and TV personality Densey Clyne. Behind her is the new wall poster of "The Orders of Australian Insects" which was launched on the same day.

LEFT: One component of the exhibition was this display of every species of butterfly recorded from Australia. It was co-ordinated by Trevor Lambkin and Ian Knight.

RIGHT: This recreated house and garden formed the centrepiece of the main gallery. The identity of numbered pest and beneficial insects was revealed in flip-top boxes in the guard rail.

ABOVE: Some of the entomologists who collaborated in "Living with Insects": Back Row (L-R): Graham Donnelly (QDL), Geoff Thompson (QM), Chris Burwell and Myron Zalucki (UQ), Brian Montgomery and Neil Gough (QDPI), Murdoch DeBaar (QFS), Angus Macqueen (CSIRO), Ross Wylie (QFS), Sybil and Geoff Monteith (QM). Front Row: Bryan Cantrell (QDPI), Tom McRae and Des Foley (UQ), Maria and Joe Sedlacek (Brookfield), Richard Bejsak (visiting).

ABOVE: Jo Tuck shows off the winner in the "Most Scientific" category of the "Build-a-Bug" competition. It was submitted by Roger Stevens.

LEFT: The spectacular murals at the entrance to the main "Living with Insects" gallery were designed by Museum artist Peter Trail.

12. **Spot the Difference** (UQ). A puzzle challenging viewers to find the differences between displayed pairs of closely related insect species. Answers were given under flip cards.
13. **Citrus Pest Management** (QDPIE). A range of beneficial predators and parasites of citrus pests. Featured a continuously playing video screening of live wasps in a mealy bug culture.
14. **Banana Pest Management** (QDPIE). A display sponsored by the banana growers association showing work being carried out at Innisfail by DPI entomologists.
15. **Strawberry Pest Management** (QDPIE). Featured the "mites for mites" strategy being used in DPI research on strawberry pests.
16. **The Cactoblastis Story** (QM & QDL). The classic story of control of prickly pear. Featured living pear infested with *Cactoblastis* moth, plus a range of the antique pear poisoning equipment used by desperate farmers before the moth's introduction.
17. **Biological Control of Groundsel Bush** (QDL). Living examples of the plant and the insects that are being released to combat it.
18. **Melaleuca - Australian Pest Overseas** (CSIRO). A display of the insects being surveyed in Australia as candidates for introduction against *Melaleuca* in Florida.
19. **Aquatic Weed Control** (CSIRO). Information, including living cultures of salvinia, water hyacinth and the insects which control them.
20. **Termites** (QDPIFS & W.A. Flick). A display of pest termites, both drywood and subterranean with live colonies of both, plus natural mounds from the bush. A mock-up of a building fumigation was also presented.
21. **Aquatic Insects** (GU). Aquaria of live aquatic insects set into a simulated cross section of a stream.
22. **Red Back Spiders** (QM). A computer mapping programme where the public could check any street in Brisbane for the known presence of red backs.
23. **Quarantine Insects** (QDPIQ). A display of quarantine insects and seized articles showing damage.
24. **Public Health Insects** (QIMR & QDH). Common pests of man himself with methods of control.
25. **Climex Climate Simulation** (CSIRO). A computer interactive in which the range of certain insect pests could be predicted under different climate situations.
26. **Biological Control of Dung** (CSIRO). A display of living African dung beetles, both buriers and ball rollers.
27. **House & Garden Recreation** (QM and others). A major undertaking was the reconstruction of a simulated cottage with three rooms and a garden. Insect pests and their damage were arranged in appropriate places throughout. These were boldly numbered and the key to their identity was given in flip-top boxes built into a barrier rail system which surrounded the exhibit. A comprehensive leaflet called "Pest and Beneficial Insects in the House and Garden" was compiled by Angus Macqueen of CSIRO Long Pocket and printed as a free hand out. A copy is enclosed with this "Myrmecia". This display proved extremely popular. It was built by Hamish Mitchell, husband of QDPI entomologist Elaine Brough.
28. **Insects in Art and Culture** (QM). A great range of paintings and human artefacts featuring insects or insect designs.
29. **Historic Insect Illustrations** (QM). A selection of early insect illustrations from books in the QM library.
30. **Scientific Insect Illustrations** (QM, CSIRO & MUP). A range of modern insect illustrations including original colour and black and white plates from "The Insects of Australia".
31. **Insects on Stamps** (QM and Australia Post). Original art work for the two issues of Australian stamps which have featured insects. Also a selection of overseas insect stamps from the collection of Judy Grimshaw.
32. **A New Insect Poster** (QM). Original art work and stages in the design and production of the Museum's new poster on "Insects of Australia - a Guide to the Orders".
33. **Centre for Tropical Pest Management** (CTPM). A poster display.

Education Programme And Ancillary Activities

Museum Education officer, Heather Janetzki, staged a vast programme of activities associated with the display. These played a key role in making the overall exhibition accessible, meaningful and exciting to teachers, students and the general public. This programme was greatly enhanced by professionally produced leaflets from the Museum's Graphics Section. Elements of the programme were:

i. **Teacher's Preview Evening.** An opportunity for teachers to preview the Exhibition was given two days before opening. They were given short talks by four entomologists and were briefed on how they could handle subsequent class visits. 116 teachers attended.

ii. **Student Worksheets.** Questionnaire-type worksheets were prepared at both primary and secondary level for use by students attending the Exhibition in class groups. During the course of the display 267 classes totalling 13445 students visited. School group visits were still increasing at the close of the display with the maximum daily total of 1135 kids reached on the second last day.

iii. **Teacher and Public Workshops.** Six 3-hour hands-on workshops on the theme of "Insects in Your Classroom" were run for school teachers. These attracted 168 participants. A modified

version was presented for the general public, mainly aimed at making collections, and these drew 67 people.

iv. **Insect Lectures.** A series of 4 weekly evening, public lectures were given in the Museum Theatre by Densey Clyne, Geoff Monteith, Doug Kettle and Dick Drew. The last three were promoted by prior interviews with the lecturer on ABC Radio. Total attendance was 494.

v. **Film Screenings.** Continuous screenings of short insect films were run in a theatrette in the galleries. Feature length films were shown for free in the main theatre on weekends. These included some of the classic old insect horror movies such as "Them" and "The Fly". The feature films attracted 2280 people.

vi. **Craft Activities.** These were presented for young children and consumed vast quantities of household junk (egg cartons, bottle tops, string, coloured paper, cartons, etc) gleaned from staff over the previous two months. All sorts of activities were held particularly building model insects. 1993 kids attended these.

vii. **The "Build-a-Bug" Competition.** This was modelled on a similar competition held at the Otago Museum several years ago. The public were invited to submit real or fanciful insects built from any materials. Sponsorship funds from Channel 9 allowed prizes to be offered in a dozen categories based on age right up to adult and for individual or group (class) entries. After a slow start entries surged in close to closing time resulting in an unbelievable total of 720 fantastic creations. Some reached 3m in length, others flapped their wings when plugged in, others had flashing eyes or built in sound recordings. Many had obviously become major group projects by schools all over the State. All were placed on display where they became a major element of the overall Exhibition (and a logistical nightmare - not to mention a nightmare for the judges!) Prizes were awarded by Channel 9 personality Rick Burnett in a grand Sunday afternoon function in the galleries.

Conclusion

The whole Exhibition succeeded beyond our wildest dreams. Attendance totalled 75,454 which is almost 4 times normal figures for that time of year. Public attendance was still growing towards the end with the largest single daily attendance being 7448 on the very last day. People were obviously staying in the exhibition for hours longer than a normal Museum visit and a common complaint was "we didn't have time to see it all ....".

The Exhibition certainly achieved its aim of producing a high public profile for entomology. The way the Exhibition evolved as a co-operative venture between a large public Museum and scientists from many institutions was also unique. It is to be hoped that Museums in other major metropolitan centres might follow the same organisations pattern to produce similar Exhibitions.

G.B. MONTEITH
Queensland Museum

PROJECT REPORT

Pollination Ecology of Lowland Rainforest Remnants.

Geoff WILLIAMS.

(This progress report, on an AES-supported project, was submitted to the Executive and is here presented without the included reference list. The report has been subject to referee comment and minor editing.)

Pollination studies of Australian rainforest communities have been confined primarily to tropical Queensland. Littoral, riverine and subcoastal rainforests represent some of the most threatened vegetation forms in New South Wales. The project investigates the flexibility in the pollination ecology of these coastal rainforest remnants with reference to their management.

Coastal Rainforests in New South Wales have been reduced to remnants of once more extensive forests or exist over their former range as degraded tracts resulting from past land use and management practices. Riverine rainforest that once occupied North Coast floodplains has been reduced to approximately 100 hectares, remaining as disjunctive remnants requiring active management (Floyd 1990). Littoral rainforest, occurring on coastal headlands, dune zones and some coastal lakes (Williams and Adam 1992, Clough 1979) has been reduced extensively in area due to sandmining, agricultural development and coastal residential use and now represents approximately 0.5 percent of the remaining rainforest in New South Wales (Pople and Crowley 1982). The majority of the remaining littoral rainforests are degraded and although their significance has been recognised under State Environmental Planning Policy No.26, they require active management.

Subcoastal rainforests occur in the escarpments and moist submontane ranges of the coastal zone (Adam 1987). They exist as discrete and intergrading vegetation units within production forests and less accessible land. They are frequently degraded, both structurally and floristically, due to past and current land management practices. All three rainforest groups contain a pronounced subtropical flora. There is a marked dry rainforest flora in riverine and littoral rainforests but subcoastal rainforests are largely dominated floristically by mixed subtropical-warm temperate species (although dry rainforests are also known from this

situation). Thus, floristically there is both similarity and distinction. The nature of any similarities or distinctions in the pollination ecology of these rainforest groups is largely unknown.

North Coast moist forests generally possess a marked diversity of plants, vegetation communities, vertebrates and invertebrates, including geologically relictual and highly localised species, groups exhibiting pronounced speciation and geographically restricted populations, evolutionarily conservative "primitive" species, species with attenuated southern or northern ranges and species presently considered rare and endangered (eg Adam 1987, Bridgewater 1987, Matthews 1974, Floyd 1990, Riek 1969, Nadolny 1984, Keast 1981, Carne 1958). Although the region is one of high biogeographic and conservation interest, the general ecology and biological requirements of individual species and interactions at the community level remain largely unknown.

There has been little investigation of the pollination and wider reproductive ecology of Australian rainforest plants (Williams and Adam, in prep.). Studies have been primarily confined to tropical Queensland (Jones and Crome 1990, Sands and House 1990, Irvine and Armstrong 1990). Ettershank and Ettershank (1991) undertook a preliminary investigation of Tasmanian Eucryphiaceae and Hamilton (1897) studied the pollination of *Eupomatia laurina*. There are a number of references in the entomological and plant literature of insects recorded from rainforest flowers, but the pollination ecology of southern rainforests is largely unknown and consequently the application of current management programs and policies cannot be fully gauged.

A range of tree species in the comparative study sites in the Manning Valley, northern New South Wales, is being sampled over a three year period. Target plant families include Myrtaceae, Ebenaceae, Monimiaceae, Sapindaceae, Anacardiaceae, Escalloniaceae, Rhamnaceae, Rutaceae and Eupomatiaceae. In addition to more intensive studies of these families a generalised assessment of the pollination strategies of a wider range of plants in the study sites is being undertaken.

Invertebrate pollinators, and anthophilous insects generally, from individual plant species are sampled by standardised netting techniques (reviewed in Williams and Adam, in prep.). The project is demonstrating a remarkable requirement to devote much time to sample sorting, a labour of Sisyphus from which pollination ecologists, occupied with vertebrate pollination vectors, are normally spared. However, these samples are providing the source for the establishment of a comparative collection of invertebrate pollinators which will provide a reference base for future studies as well as providing a more immediate vehicle for identification of sample material.

The study has been proceeding for two seasons and preliminary data are already available.

Although largely incidental to the project, several insect records of interest have resulted. Two buprestid beetles, *Metaxymorpha grayi* and *Calodema regalis*, better known from lower latitudes and at higher altitudes, have been collected in samples. The syrphid fly *Asarchina aegrota*, previously recorded from the tip of Cape York Peninsular, has regularly been observed at one lowland site. These is a steady accumulation of apparently undescribed Coleoptera in a number of families.

REGIONAL NEWS

NEW SOUTH WALES - Metropolitan

CERIT, the Centre for Entomological Research and Insecticide Technology, University of New South Wales

This quarter CERIT staff have been mainly occupied with general house keeping and the setting up of new projects and contract work. Julie-ann Short and Jenny Anderson have been very busy collecting the information for the postgraduate list published in this issue of Myrmecia. Reminder notices have been sent to 13 of the 28 institutions canvassed so it looks as if there will be a secondary list in the next issue of Myrmecia for the late ones.

A novel class of visitor, Annie Courtney has just started work at CERIT. She is called an 'invitee', something like a museum volunteer. Annie wants to become an entomologist but has had difficulty entering the field without experience as she spent many years working in an unrelated area. She is doing a degree at Charles Sturt University and to get the needed experience she has started a project investigating aspects of the biology of *Calliphora nociva* (Diptera: Calliphoridae).

In January, Martin Shivas and Jenny Anderson visited CSIRO Long Pocket Laboratories in Brisbane and were shown the buffalo fly breeding facilities by David Kemp and Peter Allingham. They also had talks with Gus Macqueen and Lindsay Barton Browne. They had a meeting with Martin Rice, Peter Green and Rudy Ulmer and discussed mutual blowfly interests. On their return they and Julie-Ann Short visited the field station of Pitman Moore at Bringelly and inspected their excellent facilities.

Visitors to CERIT included: B.J. Day, of The Australian Museum; Dr Tom Spirling, Chief, and David McCulloch, Divisional Secretary, CSIRO Division of Chemicals and Polymers.

Macleay Museum, University of Sydney

Visitors included John Jennings, Department of Crop Protection, University of Adelaide, who studied the Gasteruptiidae (parasitic wasps) in the Macleay collections and sorted all specimens to genus. Dr George Markin, Chief Biologist, Institute of Pacific Islands Forestry, Hilo, Hawaii, visited the insect collection and discussed possibilities of a joint research project on the Australian natural enemies of *Cactoblastis* (Lepidoptera: Pyralidae). Dr Max Whitten, Chief, Entomological Division, CSIRO, Canberra, inspected the insect collection. Discussions were held about solving the labelling problem and the possible translocation of the insect collection, if required by the University of Sydney. Stephen Fellenberg, (CERIT), University of NSW, examined the stick-insect collection. He will return later to identify specimens. Dr Hugh Spencer, Director, Cape Tribulation Research Station, Qld, came to look at specimens that he donated last year, including a very large *Phalacrognathus muelleri* (Coleoptera: Lucanidae). He will continue to collect large beetles for the Museum.

Woody Horning went to the entomological meetings in Hobart in February and then spent ten days on a collecting trip with Dr Tom Gush. Woody collected mostly Coleoptera and Formicidae. Dr Gush specialised on Pselaphidae, Scydmaenidae, Staphylinidae and Formicidae. Together they collected more than 5,000 specimens which are now being processed.

There is no news yet as to the fate of the insect collection from the University administration. It seems doubtful that any action will take place this year.

Macquarie University, School of Biological Sciences

Lou Rodgerson and Ros Blanche are in the midst of field work. Ros is extending her study of galling insects to Western NSW and will soon have covered the whole state! Lou is collecting *Rhytidoponera metallica* and *Pheidole* spp. to set up laboratory colonies for seed feeding trials.

Rita Holland has taken up an ARC-funded part-time position to work on the molecular biology of aphid development, and Dinah Hales still has her fingers crossed about making a postdoctoral appointment, after a conspicuous lack of applications from Australian PhD graduates. It's surprising that there do not seem to be any ex-Drosophila molecular biologists out there who would like a job for three years!

Several multi-author papers have come out of Duncan Veal's lab on the anti-microbial secretions of ant metapleural glands, with reference both to their roles in ant colonies and their potential role in control of micro-organisms of industrial or medical importance. The secretion is a very complex mixture possibly containing a number of different anti-microbials.

Noel Tait has just returned from *Peripatus* hunting in New Zealand. This project takes him to the nicest places!

Meanwhile, Andrew Beattie's lab is undergoing reproduction, recruitment and dispersal. Andrew and Christine, after some vicissitudes, have a baby daughter, now home and going well. The Beatties are about to disperse for four months to the USA and UK to study temperate and tropical fungus-culturing ants. At the same time Andrew will be celebrating the end of his term as Head of School, and will have more time for "the real world" including, no doubt, more radio and TV interviews (recently 2BL, ABC Canberra, and Channel 10, on insects as biological resources). An addition to Andrews lab staff is Aletha Cruse from Western Australia, who is working as a professional officer on the genetics of seed dispersal by ants. Two other dispersals are Rod Peakall, off to the USA for 3 months to study orchid pollination systems and genetics with Dr Steven Handel at Rutgers, and Ian Oliver, who'll attend a conference on Systematics and Conservation Evaluation at the Natural History Museum in London, and will present a paper on rapid biodiversity assessment. Meanwhile, Myriam Lefebure (home alone?) is writing up her PhD on sound responses of honeybees.

Biological & Chemical Research Institute, Rydalmere.

The position of Director of the Institute/Deputy Chief, Division of Plant Industries, has been taken by Vic Edge. Vic had been acting in the position and, after it was reclassified as Deputy Chief, faced stiff opposition for appointment. It's interesting that BCRI has suddenly become a desirable place for departmental people now that Head Office has relocated to Orange and BCRI is staying in Sydney!

Andrew Beattie has been able to return to Citrus Entomology and is actively engaged in swapping biological control agents between Australia and Israel and Thailand and Australia. His place as Acting Director of Entomology has been taken by Stephen Goodwin from the Horticultural Research Centre at Gosford. The Department is implementing the recommendations from the latest restructuring review and Entomology will be spread among a number of Programs relating to Horticulture, Pastures, etc. We are still unsure how this will change things at BCRI, but we are hoping that Entomology will remain as a recognisable discipline.

Angie Condello attended the Fenner Symposium on Biodiversity sponsored by the Australian Academy of Science in Canberra in mid-March and came back full of enthusiasm for taxonomic activities.

Barry Wallbank attended the Australian Oilseeds Federation 1992 Oilseeds Forum at The Ramada Hotel at Bondi Beach during March.

Victor Rajakulendran was in Tatura, Victoria in April to attend the Australian Processing Tomato Research Council's meeting on IPM strategy for the processing tomato industry and made a presentation.

Gary Levot has been augmenting his normal animal ectoparasite duties by examining insects extracted from corpses. Samples from two deceased persons were passed under his nose in April - one was in a locked room and contained only sarcophagid larvae, while the other came from a partially buried corpse containing *Carpophilus* larvae. Nice work if you can get it.

Graeme Baker continues battling plague locust numbers in New South Wales although cooler weather in April has helped reduce the problem.

Max Day, CSIRO Entomology, spent a day in late April with Murray Fletcher talking leafhoppers and preparation of a checklist on the Australian Cicadellidae.

Graham Brown hosted four quarantine inspectors from Ethiopia in April. The inspectors are doing a whistle-stop tour of quarantine facilities in Australia and visited BCRI to see the Insect Collection and the Plant Quarantine Station.

Department of Medical Entomology, University of Sydney at Westmead Hospital

Richard Russell has been fielding the usual seasonal requests for radio interviews on mosquitoes and arboviruses, and headlice have been in the news again. Richard has also received some welcome publicity concerning our mosquito-dog heartworm research and some unwelcome publicity concerning our tick-spirochaete research.

Merilyn Geary and Stephen Doggett attended the AES in Hobart and collected mosquito eggs and ticks during the return journey. Stephen continues in his 'struggles with spirochaetes', and Merilyn has been able to provide eggs of another *Aedes* species for electron microscopy description by our colleague in Florida, Dr John Linley.

Peter Wells and John Clancy have had a reasonably quiet few months with relatively little arbovirus activity being revealed through the mosquito sampling programme. However, Ross River virus has been isolated from inland locations and from the south coast, and there appears to be more substantial activity on the north coast. Peter is continuing his investigations into the vector competence of the mosquitoes *Aedes vigilax* and *Culex annulirostris* for Ross River virus and other arboviruses, and in order to supplement his work with laboratory colonies he collected larvae and adults from field populations at Batemans Bay and Griffith respectively.

A new member of staff, Ms Danielle Avery, commenced duty. Danielle is employed on a Ramaciotti Foundation grant for culture and characterisation of the spirochaetes being isolated from ticks by Stephen Doggett. The molecular characterisation is being undertaken in collaboration with Dr John Ellis of the Department of Microbiology, UTS.

Professor Ma Su-Fang, Director of the Department of Medical Entomology, Beijing Tropical Medicine Institute, and a Research Entomologist of the Institute of Zoology, Academia Sinica, visited from China in March. Dr Bert Cook, a veterinarian with an interest in biting flies and a regular visitor from New Zealand to our Department, visited again in March.

Australian Museum, Entomology

Gerry Cassis and Shane McEvey took part in the Cape York Peninsula Scientific Expedition organised by the Royal Geographical Society of Queensland. From the Heathlands basecamp, sorties were made as far north as the Jardine, as far west as the Telegraph Line and the Dulhunty, Cockatoo, Gunshot crossings and east to the coast at Captain Billy Landing. Conditions were not as wet as expected and collecting was reasonable. Gerry pushed far south to reach the sand dunes at Shelbourne Bay. As well as lots of bugs, and particularly good series from *Drosera*, a number of earwigs were taken. In eastern Australia Gerry continues to find numerous new species of "earless wingwigs".

Dan Bickel, among other things of greater scientific importance, is providing entomological advice to the creators of the Gargantuans From the Garden Exhibition; the monsters eat into his time.

Shane is teaching Masters course work at Sydney University for Fred McDonald while Fred takes six months leave. The Insect Anatomy and Taxonomy course gives him plenty of scope to introduce students to the Recognition Concept of Species and the associated theoretical advantages. Together with students he is writing up a study of the courtship behaviour and karyotype of a new species in the *Drosophila nasuta* subgroup from north Queensland and results of surveying the Sydney and NE NSW drosophilid faunas. Shane is exploring AARNet and has joined the Sydney E-RMS (GIS) users group.

David McAlpine and Barry Day spent a week at ANIC in Canberra working on Syrphidae. The objective is to provide a basis for generic identification of this family, an important group of pollinators of Australian native plants. Copies of the working key to genera are available on request.

Julie Manning tirelessly continues to provide excellent curatorial assistance with the beetle collection, a never ending job.

The department has won a contract with the Sydney Water Board to study benthic fauna downstream from the Sewerage Treatment Plant; Eren Turak will undertake the necessary field and laboratory work.

Julie Virtue has progressed past the halfway point with her artwork. Her painting

of Tasmanian butterflies runs to schedule for publication later this year.

Forestry Commission of NSW, Wood Technology and Forest Research Division

On Tuesday 28th April, the Forestry Commission announced its plans to "commercialise" (not corporatise as suggested in the last contribution from this organisation - *Myrmecia*, November 1991) and restructure. The number of Forestry Regions is to be reduced from 9 to 5. Total staff will be reduced by 160 (10%) through targeted voluntary redundancy. Head Office will lose 61 (30%) and Wood Technology and Forest Research Division (which includes the Entomologists) will lose 26 (about 25%). This WT&FRD loss includes 13 professional and technical staff. **All** staff have received letters inviting expression of interest in voluntary redundancy.

Christine Stone was promoted to Research Scientist in December 1991. Chris is emersed in the analysis of her data from the River Red Gum study and emergence is not expected until spring. The Commission will be placing much greater emphasis on eucalypt plantation research, commencing 1992/93, and this will become a major commitment of the Biology Section.

Deborah Kent and Alan York attended the Conference and Bob Eldridge the CHAEC meeting in Hobart in early February. Debbie presented a paper on eusociality in the ambrosia beetle, *Austroplatypus incompertus*, and Alan a paper on the impact of long-term fuel reduction burning on ant communities. Alan is currently processing the rest of the material from this project to look at other invertebrate groups.

Debbie was awarded a Society Research Grant which provided partial funding toward a study tour of Tasmania to research ambrosia beetles. This was undertaken immediately following the conference and thanks go to Dick Bashford for his organisational assistance.

Bob, among other things, has been doing battle with the draft Australian Standard - "Protection of Buildings from Subterranean Termites - Prevention, Detection and Treatment of Infestation", which combines and expands on the three existing termite Standards. The Standard has had a number of problems, but is rapidly approaching postal ballot stage.

At the time of writing Darren Waterson is packing his bags and mosquito net for New Guinea. Darren is to participate in "Operation Anopheles 1992" with the Army Malaria Research Unit during May. The aim of the operation is to determine the speciation and distribution of malaria vectors in the Western Province of Papua. Other insects, particularly wood borers and termites, could also be in danger, according to Darren's collecting shopping list. Bob Eldridge has imposed a "bag limit" on termites.

David Spolc has completed a first draft of a Sirex Wasp Control Manual (with illustrations). The manual covers all theoretical and practical aspects of sirex control. In March David began work with the WT&FRD tree breeder, Ian Johnson, to investigate *Pinus* clonal resistance to the phytotoxic mucus of sirex.

John CLANCY and Shane McEVEY
Regional Councillors

NEW SOUTH WALES - Country Areas

CSIRO Pastoral Research Laboratory, Armidale

Kathleen King continues her work on a Sustainable Grazing Systems Program. She is investigating the effects of various management practices on the biological processes involved in the decomposition of plant residues, and in nutrient cycling in grazed pastures of the temperate high rainfall zone. Her entomological interest is in the effects of those practices on microarthropods (Collembola and Acari) which she has found enhance the decomposition of plant litter and transfer of nutrients to soil.

University of New England, Department of Zoology

Stephen Asante continues his studies of the population dynamics of the woolly apple aphid, *Eriosoma lanigerum* (Hausmann).

Department of Agronomy and Soil Science

Three new Ph.D. students have started under Peter Gregg. John Stanley will be studying predators of *Helicoverpa* in cotton, Angela Nessic the reproductive biology of *Agrotis* sp. and Supawan Kianmappee from Thailand will investigate allelochemicals in barley and their effect on *Mythimna convecta*.

At the other end of the process, two students have submitted theses. Alan Spessa's M.Sc. thesis deals with modelling the reproductive performance of *Helicoverpa* spp., while Melissa Betts has studied mating disruption in *Helicoverpa* for a post-graduate diploma. Alice Del Socorro has graduated with a M.Rur., and is going on to work for a Ph.D..

Agricultural Research Station, Myall Vale

In his capacity as Chairman of the Cotton Working Group of the International Organisation for Pesticide Resistance Management, Neil Forrester led a small delegation of fellow Working Group members to India last October. The group visited ICRISAT at Hyderabad and the cotton growing area of Guntur in Andhra Pradesh.

The aim of the trip was to review the insecticide resistance problem in *Heliothis (=Helicoverpa) armigera* in India and to formulate countermeasures. The United States Department of Agriculture (Office of International Co-Operation and Development), which funded the trip, and the World Bank are interested in funding any further initiatives to alleviate the resistance problem in India.

Senator Fred Chaney (Shadow Minister for the Environment) visited Narrabri Research Station briefly in late November to discuss cotton research and environmental issues. It was a lightning visit (literally) as he was greeted by a fierce summer thunderstorm.

North Coast Agricultural Institute, Wollongbar

Neil Treverrow has a project on pests of banana bunches, funded by the HRDC, coming on line. He has recently taken part in a major grower seminar on the production of tea-trees for oil.

John Macdonald is currently heavily involved in blueberry entomology.

Agricultural Research & Veterinary Centre, Orange

Col Bower and Graham Thwaite had a visit from Rich Moore, International Technical Manager (Miticides) for Uniroyal, Ian Hore, Australian Technical Manager, and two Batlow agricultural consultants, Kevin Dodds and Robert McCloud. The subject was the use of Omite(R) and the apparent development of resistance, which Col and Graham were able to refute.

The other visitor was Mike Tichon of Abbott's, to discuss their promising new miticide, Dibader(R).

At this time of the year field work is still being tidied up, including trials using a mineral oil as a miticide. This product, Sunspray Ultrafine Spraying Oil from the U.S.A., is proving predator-friendly.

Not all visitors to Orange are welcome. The European Wasp has apparently settled itself into town for the long term.

Yanco Agricultural Institute

Nick Pereplecia from the Pest Eradication Unit of the S.A. Department of Agriculture visited in mid-April to discuss the Fruit Fly Sterile Release Project being conducted by David James in Cowra. A bureaucratic problem has prevented the release of sterile flies to combat outbreaks in Adelaide this season, but this should be resolved shortly. The NSW Agriculture Research Station at Gosford is currently the only source of sterile Queensland Fruit Flies in Australia.

David James has been in demand lately to talk on pest management at organic horticulture seminars. The latest, at Mildura, was attended by more than 100 growers of varying shades of green. David's main memories of the day are losing his voice and being confronted by a number of commercial representatives extolling the virtues of seaweed extract as a control agent for virtually all pests!

The Redlegged Earth Mite season approaches and David was heartened to learn that Incitec Ltd. propose to use "strategic mite management", developed at Yanco over the past few years, as the basis of their publicity campaign in the coming seasons. Rather than selling chemicals, they will be selling a management strategy (based on their products, of course). David James thinks that it is definitely a step in the right direction. He looks forward to receiving his very own "Mite-Alert Meter", invented by Incitec, but based on Yanco research.

Richard FAULDER
Regional Councillor

SE QUEENSLAND

Lands Department, Alan Fletcher Research Station

Dr Ross Hynes has been appointed the new Research Director for the Land Protection unit of the Department, which includes the Alan Fletcher Research Station.

A number of International Conferences on Weed Control have kept the AFRS staff busy. The 8th International Symposium on the Biological Control of Weeds held in New Zealand in early February was attended by many from the Research Station. Rachel McFadyen also attended the 1st International Weed Control Congress, in Melbourne. Both gatherings brought many International visitors to the AFRS. Amongst these were Professor Cliff Moran, Dr Helmut Zimerman and Dr John Hoffman from South Africa, Dr Ted Center from the USDA, Dr Harry Evans from IIPC, and numerous entomologists from Samoa, Brazil and Fiji.

Seemi Khan has commenced a PhD investigating host selection by *Epiblema strenuana* a biocontrol agent introduced and successfully established for *Parthenium hysterophorus* control. Seemi will be investigating apparent differences in susceptibility of various sunflower cultivars to this tortricid gall moth.

CSIRO Long Pocket

More than 20 overseas entomologists visited Long Pocket Laboratories recently, many on their way home after the 8th International Symposium on the Biological Control of Weeds, in New Zealand. Two of these were Fijian nationals Humesh Kumar and Pranish Prasad, who spent time training with the horticulture group, the weeds group, and Jamie Seymour in the pecan groves of Strahman Farms at Moree, NSW. Another trainee was Tay Boon from ASEAN PLANTI, based at Kuala Lumpur. Tay is working on the biological control of water hyacinth in Malaysia.

Jamie Seymour continues his nomadic existence researching green vegetable bug in pecans at Moree. He routinely follows a cycle of about three weeks in the field followed by a week at Longpocket. Jamie spent a month during March\April visiting Hawaii, California, Texas and Georgia to gather information on management of pecan pests in the USA and on green vegetable bug parasites, in particular the tachinid genus *Trichopoda*, which attacks the adults.

Bob Sutherst was invited by the International Union for the Conservation of Nature (IUCN) to present a paper entitled "The potential advance of pests in natural ecosystems under climate change - implications for protected area planning and management" to a workshop on the impacts of climate change on protected areas. The workshop was part of the 4th World Congress on National Parks and Protected Areas, held in Venezuela from 10-21 February. A major aim of the Congress was to produce the "Caracas Declaration" to be transmitted to the June 1992 UN Conference on Environment and Development in Rio de Janeiro.

While at the Congress, Bob also presented talks to workshops on problems with introduced species in protected areas, and on data management in protected areas. He enjoyed the experience of working in the new field of natural ecosystems and met many Australian and overseas people associated with Parks Management. On the way over he interviewed a candidate for a CTPM Education position, visited the IPM group in Virginia, and finally returned with wallet and camera intact.

Peter Room made his third and final salvinia control visit to Zambia and Kenya in late March. The salvinia weevils have notched up another success at Ndola in the copperbelt of Zambia, where they have cleared salvinia from the city's water storages over the past 18 months. On Lake Naivasha in Kenya, weevils released almost a year ago are well established but it will probably take another two years before the salvinia problem there is solved. Low temperatures due to the East African drought, and diverse vegetation growing on the salvinia mats are restricting weevil population increase.

Don Sands visited Papua New Guinea for three weeks in March. The main purpose was to survey establishment and impact of the braconid parasite *Cotesia erionotae*, introduced earlier to attack larvae of the banana skipper butterfly, *Erionata thrax*. Collaborating in the survey was Fred Dori, Senior Entomologist with the Department of Agriculture and Livestock (DAL). The parasite was found to be entirely successful where it had established in Western, Central, Morobe, Eastern Highlands and West New Britain Provinces, where it was difficult to find unparasitised host larvae. The braconid is spreading slowly to other infested areas. It is established on Daru Island and has been released on the PNG edge of Torres Strait, greatly reducing the risk of its skipper host island-hopping to Australia. Don also had discussions with entomologists from DAL about prospects for collaborative studies on green vegetable bug, which is a pest of legume crops in the Markham Valley.

Queensland Forestry Service

QFS is to host a Chinese mission to Australia to investigate *Eucalyptus* pests and diseases. During their two week visit in April/May 1992, delegates will inspect *Eucalyptus* plantations and natural stands in both southern and northern Queensland. The visit is part of a reciprocal program under the Australia/China Agricultural Cooperative Agreement. Ross Wylie visited Southern China on a similar mission in August 1991.

Queensland Institute of Medical Research

Brian Kay is presently in South America chairing a session of the World Environment Conference at the invitation of the Brazilian Government. Whilst in Brazil he will also be consulting with researchers from the University of Sierra, Fortaleza who are researching *Megacyclops* for *Aedes aegypti* control.

University of Queensland

The Department of Entomology has been host to many interesting visitors recently, providing much scope for seminars and discussion. Professor Erkki Haukioja (Department of Biology, Turku University, Finland) visited Gimme Walter to continue their collaborative studies. The pair discussed herbivory, theoretical aspects of evolutionary ecology, and their own sex ratio experiments with Finnish sawflies. Gimme returns to Finland in June to set up the next series of experiments. Derek Maelzer (Waite Institute) is visiting the department until May to work with Myron Zalucki on the analysis of *Helicoverpa* light trap data. This research aims at prediction of the size of the second moth generation in relation to the size of the first generation, and weather patterns. Professor Hermann Niemeyer (University of Santiago, Chile) will be visiting the department from May 11 to May 15. Professor Niemeyer is well known for his research on mechanisms of host plant resistance to cereal aphids, and will be presenting a seminar on the involvement of hydroxamic acids in wheat resistance to aphids.

From 10-24 March, Joan Bryan, Margaret Schneider and Greg Daniels participated in the Cape York Peninsular Scientific Expedition organised by the Royal Geographical Society of Queensland. Joan was particularly interested in collecting mosquitoes of the *Anopheles farauti* group. Surprisingly only two larval habitats were found and very few adults. Margaret and Greg concentrated their collecting on tabanids, asilids and other Diptera, as well as native bees. Insect

numbers were generally low, perhaps because of the poor wet season, but despite this a great diversity of species was collected. A long series of an undescribed species of *Suragina* (Athericidae) was collected, the only other Australian locality of this genus being the Claudie River rainforests. A new species of *Hermetia* (Stratiomyidae), a blowfly mimicking tabanid, and several new robberflies were among the other exciting finds.

Post-graduate students Helen Wallace and Katrine Meurant recently presented papers at scientific meetings. Helen's paper, "Investigation of pollen-pistil interaction in Macadamia using ESEM and TEM" was presented at the ACEM12 and ANZSCB11 Joint Conference on Electron Microscopy and Cell Biology, held in Perth in February. Katrine attended an Ecdysone Workshop at the University of Liverpool.

Myron Zalucki travelled to Bogor, Indonesia in April to review past entomological research at the Semeo-Biotrop Research Station, and advise on future directions. Shortly after his return, Myron, Martin Rice and Tony Clarke are off to the Applied Entomology Conference in Canberra.

Queensland Museum

Ted Dahms and Gudrun Sarnes spent three weeks at Chillagoe during March-April collecting parasitic Hymenoptera as part of an ABRS grant to study the semi-arid encyrtid fauna of Australia. It was their first visit to Chillagoe and they were impressed by the countryside and the collecting. Encyrtid collecting was never this good! Material collected contained new species and probably new genera. This sample differed noticeably in generic and specific content from previous collections in the Mareeba and Charleville districts.

On their odd days R&R Ted and Gudrun took advantage of the National Parks' cave tours and were equally impressed with these. Their other area of study in Queensland is the mulga lands around Charleville, which they will revisit in spring-early summer this year.

Penny Greenslade is currently visiting the Museum from Canberra. Penny is gradually sorting her way through the Museum's collection of rainforest mountain Collembola.

Centre for Tropical Pest Management

The Centre is rapidly consolidating, following the recent move of its headquarters to the permanent site on the University of Queensland campus, the choice of a logo, and the production of the first of a monthly newsletter. The Centre HQ is to be officially opened by The Right Honorable Ross Free, the Minister for Science, on the 20th May.

Brad Congdon, ex Griffith University, has been appointed Postdoctoral Fellow with the CRC to work in the Identities program.

The Modelling program ran a Strategic Planning Workshop in March to define the scope and structure of the Centre's Generic Insect Population Model. The workshop brought together modellers and potential users from many organisations, and proved invaluable in helping to define specifications for the model.

Elaine Brough attended the DPI Horticulture Extension Conference in Rockhampton in April, and gave an overview of the Centre, emphasising the matrix nature of projects and expertise.

Manon GRIFFITHS
Regional Councillor

DPI Entomology Branch

The soil-entomology studies in central Queensland received a boost with the approval to employ Bronwyn Kettle as an experimentalist to work with Les Robertson. Bronwyn has been working as a casual employee (funded by GRDC) on black sunflower scarabs. This past year the pest has been observed damaging seedlings of the forage tree-legume, *Leucaenia* at Clermont and Rolleston. The scarab had not previously been recorded as far south as Rolleston.

Robert Corcoran (Indooroopilly) is visiting Manila and Bangkok to help with the initiation of research in the ACIAR heat disinfestation project for fruit fly hosts for export. This project involves the Department of Agriculture Thailand, the Bureau of Plant Industries Manila and the Post Harvest Horticulture Training Centre of the University of the Philippines at Los Banos.

Bernie Franzmann (Toowoomba) has been busy speaking at field days about sorghum insect pests since the 2nd Australian Sorghum Conference in February. Immediately after the conference talks were held at Dalby, Emerald and Biloela to bring the latest research results to sorghum growers. Later days were held at Gunnedah, Warwick and Clermont.

Dave Murray (Toowoomba) and Bernie recently visited the central highlands - Bernie to extend his regular sampling of *Nysius* spp and Dave to release the exotic parasitoid of heliothis, *Hyposoter didymator*. Dave found a 40 ha field of sunflowers (that's 2 million plants !!) harbouring an average of one adult *Helicoverpa armigera* per head. Dave says the spectacular is commonplace in the highlands.

Neil Gough (Indooroopilly) visited Stuart Smith in Darwin in April to give a workshop to DPIF staff on the identification and control of mites and to visit local ornamental nurseries. He was also rained on for three days by Cyclone Neville.

Bureau of Sugar Experiment Stations

Peter Allsopp trekked off to the AGM in Hobart and was glad to return to warmer climes. Why do people live in cold places? He also attended the workshop on modelling

conducted by the Centre for Tropical Pest Management.

Dave Holdom's life has been further disrupted by the arrival of a second daughter.

Bernie FRANZMANN
Regional Councillor

NORTH QUEENSLAND

James Cook University - School of Biological Sciences

Rhondda Jones was recently invited to a symposium on Insect-Plant Relationships at Wageningen, The Netherlands. Her paper on "Search behaviour: strategies and outcomes" was well received.

Debbie Rae has submitted her PhD thesis on the biology of sugar cane mealy bug.

Cathy Yule visited JCU recently. She is currently living in Kalimantan, Indonesia, and is in the latter stages of writing up her PhD thesis on "The ecology of a seasonal tropical stream on Bougainville Island".

A number of new PhD students have commenced their studies, including Bill Doherty (DPI Oonoonba Lab) who is working on biting midges of the genus *Culicoides*, Max Overton who is studying polymorphism in the butterfly *Hypolimnas bolina* and Zoe Rosser who will look at the community ecology of rainforest streams.

Lands Department - Tropical Weeds Research Centre

Marie Ablin attended the VIII International Symposium on Biological Control of Weeds in New Zealand in February.

QDPI - Mareeba and Innisfail

Harry Fay headed for the cooler climes of Hobart in February for the Society's AGM. He represented the Organising Committee for the 24th AGM and Scientific Conference which will be held in Cairns in July 1993.

Ian Cunningham also journeyed south, as far as Brisbane, to attend the opening of the "Living with Insects - Friends and Foes" exhibition at the Queensland Museum. He also met with Bryan Cantrell (QDPI) and Ebbe Nielsen (ANIC) to discuss the entomological component of the Cape York Land Use Study.

Ross Storey was recently visited by Barry Moore who was in the North to check on his Julatten block and to continue his studies on carabids.

Dr Jun-ichi Kojima of Ibaraki University, Japan, visited the Mareeba labs in April. He is spending 2 months at the CSIRO Tropical Forest Research Centre in Atherton to work on paper wasps, especially the swarming *Ropalidia*.

Richard Piper will take a break from the Banana Integrated Pest Management project in late April to attend the 5th Australian Applied Entomological Research Conference in Canberra.

Neil Gough is due in North Queensland in May to look at the Orchid beetle situation.

Dave Sinclair (Department of Health Cairns) reports that they have commenced a survey of *Aedes aegypti* in all the Aboriginal communities in Cape York Peninsular. It will continue until July

Harry FAY
Regional Councillor

AUSTRALIAN CAPITAL TERRITORY

CSIRO Canberra

Leading the bulletin is the news that Dr Philip Spradbury has been awarded the degree of Doctor of Science from the University of London. The award is in recognition of his work on social wasps and the screw-worm fly, *Chrysomya bezziana*. Congratulations Phill

A number of CSIRO staff, including Roger Farrow, Paul Wellings and Max Whitten, attended the Aust.Ent.Soc. AGM and Conference in Hobart last February; Max presented a paper entitled "How Entomology helps Australian Agriculture". As usual Max has travelled widely in the last few months, and has presented papers in Adelaide and Finland, and visited Tuscon, Arizona and the CSIRO staff at the Montpellier facility.

Other travellers include Ray Akhurst, who has departed for a visit to the sunny Azores to collaborate in a USDA-funded project on use of nematodes to control the Japanese Beetle; Ray will also visit Montpellier and Cambridge, UK, where he will discuss mechanisms of Bt resistance in insects. Keith Wardhaugh and Rod Mahon were ACT delegates to a workshop on "The Environmental Impact of Avermectin Usage in Livestock" in Ohio; Keith was a coordinator of that meeting. Keith Binnington visited MAF in Lincoln, NZ, to work with the group there on *Serratia* pathogens of scarab beetles. Keith's book "Physiology of the Insect Epidermis", which he co-edited with Arthur Retnakaran, has recently hit the library shelves and will be of interest to many Ent.Soc. members. Other authors hard at work include Tony Watson and Hilda Abbey who have now sent their "Atlas of Australian Termites" to press.

The Stored Grain Research Laboratory has had a typically active period. Jonathon Banks spent two weeks in China as a guest of the Ministry of Commerce on an exchange of technology of grain storage and insect control, and Mr Ren Yong Lin of the Chinese Ministry of Commerce has now returned to China after a seven month visit to the SGRL. On a similar theme Barry Longstaff has received approval for a two year ACIAR supported project on development of an expert system for management of stored grain pests in China.

Barry Bridgeman, Manager of Grain Protection at GRAINCO, Toowoomba, has joined the group for a three month visit; Jan van Graver has lately been away from the group almost constantly, with numerous field trips to Leeton and Mildura. On the conference front the SGRL hosted the Grain Industry Pest Control Conference in late February, and Julie Carter set up a display on the SGRL facility at the Grains Week Conference in Melbourne.

The Pheromone Group have been hosts to Max Suckling and John Clearwater from DSIR, NZ, both of whom are in Canberra to attend the Australian Applied Entomology Research Conference. Their main interest is in the techniques and equipment developed at CSIRO, and in particular in the portable EAG apparatus which can be used to measure aerial pheromone concentrations in the field. The potential for trans-Tasman collaboration is being explored. Several staff from the Insect Pathology group co-star in the blockbuster video production "The Green Alternative: Fungi for Termite Control" which will be used for promotional work. Watch program listings!

Australian Plague Locust Commission

It has been a busy period in a very busy season for the Australian Plague Locust Commission. Messrs Francisco Bonilla and Onesimo Poot from Costa Rica and Mexico, respectively, spent a month becoming acquainted with APLC and outback cuisine. Four scientists from the Locust Control Unit, Xinjiang, China visited in March and survived a tour of Chinese restaurants of the Central West of NSW. There have been a number of other comings and goings at the Commission. Maria Woodgate has left after surviving a chopper crash and the conflagration at the Quilpic pub. Paul Zborowski has also gone, and was so distraught at leaving that he took himself off to Europe and Africa to recover! Welcome to Mick Murphy and Robert Thorne who have joined the firm. News from the transfer front: Kim Bryceson will not be with APLC next season as she has signed with BRR for an undisclosed sum. She will commence remote sensing/GIS research into the drought, which will undoubtedly break as a result...

David DALL
CSIRO Entomology

Australian National Insect Collection

The Diptera section of the ANIC is shortly to expand, with the recruitment of Eva Bugledich to assist with the ABRS-funded production of a Catalogue to the nematocerous flies. Eva provided the backbone of the DASET(T)-funded Queensland Wet Tropics databasing project in the ANIC a few years ago and has since been databasing for the CSIRO Herbarium while struggling to maintain enthusiasm for a Master's thesis from a previous vertebratophile existence. Further assistance, although of a shorter duration than Eva's three years, comes from Karina Hansen, who will be illustrating chironomids and making microscope slides of material generated from a joint Griffith University/CSIRO project on SE Queensland midges.

Pete Cranston has been preoccupied with biodiversity and how to get a handle on it. He and Terry Hillman (Murray Darling Freshwater Research Centre) tested a group of vacation students (originally known as "parataxonomists" but now termed "biological diversity technicians") for effectiveness in rapid sampling, sorting and recognition of "morphospecies" of odonates, ephemeropterans and chironomids from some selected sites. Briefly, results showed that such a labour force could sample effectively to a protocol, and with limited experience, sort samples to family level. However, not unexpectedly, problems arose at the species-level, raising doubts about application of the results to comparative biodiversity assessment. It was concluded that mainstream taxonomists must be integrated into such rapid assessment techniques. The work was completed in time to assist the debate on biodiversity at the 1992 Fenner Environment Conference on Biological Diversity held in Canberra in February.

Ebbe Nielsen, along with Peter Cranston, attended the Fenner Conference. During the meeting participants examined and commented on the draft for "A national strategy for the conservation of Australia's biological diversity" (also known as the BDAC report). Both Ebbe and Peter proclaimed the meetings productive and felt all parties provided valuable input.

The Lepidoptera section has been on the move. Ted Edwards and Ebbe Nielsen visited western Victoria to study the late summer flying species of Castniidae (sun moths). Thanks to valuable help from local naturalists Keith Hateley, Fabian Douglas and Frank Noilker their trip was very successful. Shortly after their return Ted was off again, this time with David Rentz to Heathlands, near the tip of Cape York Peninsula. They formed the second ANIC team to visit the site as part of the Royal Queensland Geographic Society Expedition.

There have been three visitors to the Lepidoptera section. Dr Jeremy Holloway of the International Institute of Entomology, London, visited for a few days to work with Ebbe on lepidopteran biogeography. Also, Dr Gaden Robinson of The Natural History Museum, London visited for two weeks to work with Ebbe on the completion of the monograph "Tineid genera of Australia". The volume was completed and is now with the printer. It is expected to appear in July of this year. Finally, Ian Common visited to work on oecophorids with Leane Regan. They are making good progress with the first volume of "Oecophorid genera of Australia" which deals with the *Wingia* group.

Alan Andersen visited the Hymenoptera section for a week to work on some recently encountered ants, and later Hanna Reichel (University of Wurzburg, Germany) dropped by for the same purpose. Both reported successful efforts and promised return visits.

Mike Crosland (formerly of the University of New South Wales and currently at the University of California, Davis) stopped by after giving a seminar titled "RAPD DNA markers for evolutionary studies on Australian insects" in the Division of Botany and Zoology at ANU.

Steve Shattuck is off on a collecting trip to Perth and the Kimberley. He will be joined by Peter Cranston and Penny Gullan (ANU) during the Kimberley section.

Meanwhile, John Lawrence in the Coleoptera section has been working with recent arrival Jarmila Kukalova-Peck on the evolution of the hind wings in Coleoptera. John reports that their manuscript is progressing well and should be completed soon.

Andrew Calder and Walter Dressler continued the ANIC efforts to document the insect fauna of the Brookfield Conservation Park, South Australia, by spending a week collecting during early April.

Australian National University

The activity levels at ANU have been running high lately. Lyn Cook, an Honours student working on karyology and reproductive biology of the gall-forming eriococcid genus *Apiomorpha*, reports exciting chromosome discoveries with widely different patterns in different species. She says that although this is similar to the patterns seen in some ants of the genus *Myrmecia* it is much less painful to document!

John Trueman is in the process of writing up his PhD studies. Among other things he is proposing a new naming system for the wing venation of Odonata. John also reports that he has recently discovered *Hemiphlebia mirabilis* at sites away from Wilson's Promontory. Well done John!

Chris Reid spent some very productive time collecting beetles in western Java through the Bogor Zoological Museum. He managed to collect 91 species of Chrysomelidae despite a severe drought. After the Hobart AGM Chris investigated the chrysomelid fauna of Tasmanian *Nothofagus* forests. He couldn't match the number of species found during his Java trip, but did manage to find four species feeding on *Nothofagus*.

Penny Gullan and Ting Kui Qin were also collecting in Tasmania after the AGM, and made many biogeographically interesting coccoid collections, including representatives of taxa previously known only from New Zealand.

Nick Drayson's Masters project on one of the more interesting genera of Chironomidae (*Cricotopus*) is coming along well as he has substantiated a pupal-based species concept with data from larvae and adults. His work will be useful to all fresh water biologists who need to identify immature chironomids from their sampling programs.

Steve SHATTUCK
Regional Councillor

WESTERN AUSTRALIA

Dept of Agriculture

Ian Dadour has received a grant of $20.000 from the Dept of Industry, Technology and Commerce to involve 300 schools in the south-west of Western Australia in the dung-beetle programme. The schools will be monitoring the bush-fly and dung-beetle populations. The programme expects to get off the ground during the 4th term, 1992.

Professor Hermann Niemeyer of the University of Chile visited Francoise Berlandier. He heads a group researching the causes of cereal resistance to aphids. Prof. Niemeyer also learned from Ian Dadour a little about the field testing kit to measure insecticide resistance in aphids. The test kit is based on a microplate assay technique, developed by Rothamsted in the UK, and was adapted specially for Western Australian conditions by the Entomology Branch. Congratulations are also due here : Francoise has been promoted to Entomologist.

Rob Emery and Andras Szito are still working on the biology and control of *Heteronyx obesus*. They have been trapping about 30,000 beetles per night in the light traps. They have some 7500 specimens of cockchafers in their collection, comprising about 50 new species and 4 or 5 new genera. Andras has described the first new genus and species which will hopefully appear soon in the Journal.

Curtin University

Jonathan Majer now resides in an atmosphere of calm and tranquility, now that the South Australians have taken over the Executive. Not only has the filing cabinet outside his office door gone, but on the inside we now find a much more relaxed entomologist, if he is there that is.....
Jonathan recently attended the Enviromine conference in Sydney and spoke on the need to re-establish ecosystem functions and processes in rehabilitated areas. Not having attended any mining conferences for a couple of years, he was pleasantly surprised to hear how many mining companies have commenced invertebrate studies in their rehabilitation.

Anne Scougall will shortly return from a three month contract with the Environmental Protection Authority, to start a PhD study on the recolonisation of plants, invertebrates and vertebrates in reconstructed agricultural landscapes.

Tony Postle has recently visited the Argyle diamond mine site in Kununurra to continue

with his invertebrate studies. On his return he continued on to Brisbane for a short holiday.

Alan Yen of the Museum of Victoria recently visited the School of Biology in order to compare notes on tree sampling work and Steve Shattuck of the ANIC is visiting to look through the *Iridomyrmex* (or what used to be *Iridomyrmex*) collection at Curtin.

CALM

In February, Ian Abbott's thesis (Studies of patterns and processes in biogeography, community ecology, and population ecology) was passed by the University of Western Australia for the Degree of D.Sc. Ian is currently writing up seven years' research on the ecology of the Jarrah leafminer.

WA Museum

Museum Scientist Wins Award

Western Australian Museum curator Mark Harvey has been awarded one of the nation's most prestigious awards for young scientists.

The Edgeworth David Medal, awarded annually by the Royal Society of NSW, acknowledges distinguished contributions to Australian science by young scientists under the age of 35.

Dr Harvey, Curator of Arachnids at the Western Australian Museum, hailed his award as well-earned recognition of the scientific research currently being done within Australian museums.

It is only the third occasion that the award, first presented in 1948, has gone to a zoologist. Last year's recipient was also a Museum scientist.

Dr Harvey, who joined the Museum three years ago, said he believed that the award acknowledged that scientific research in Australian museums had come of age.

"Museum research is very relevant to our society", he stressed. "It is vital in terms of its contribution to endangered species programs, biodiversity and the documentation of the fauna of Australia".

Dr Harvey said there were many thousands of undescribed species of spiders and other arachnids in Western Australia - and that the lack of information about spiders in Australia had initially attracted him to specialise in this area. Since then he has studied spiders and other arachnids from Cape York to Krakatoa in Indonesia. He completed a PhD at Monash University before joining the CSIRO and later the Museum of Victoria.

Dr Harvey has published 50 research papers in scientific journals and is the author of "Worms to Wasps" co-authored by Alan Yen and published by Oxford University Press and a "Catalogue of the Pseudoscorpionida" published last year by Manchester University Press. He believes his achievements in this area contributed to his selection for the award.

Dr Harvey received the Edgeworth David Medal (named in honour of an eminent Australian scientist) at the annual dinner of the Royal Society of New South Wales in Sydney on March 18.

In late January, brief visits were paid to the museum by Qiao Wang of La Trobe University to study phoracanthine beetles, and Tony Watson of CSIRO, Canberra, who looked at Odonata accessions.

In February, Terry Houston attended a workshop organised by the WA Herbarium, which provided an introduction to DELTA software. Mike Dallwitz's instruction and demonstration was convincing enough to result in the WA Museum registering as a multi-user of the software, a tool for the storage and manipulation of taxonomic data.

CSIRO

The redlegged-earth-mite field ecology season is about to get under way for this year's field sampling. James Ridsdill-Smith is currently overseas visiting Dr Anne Baker of the Museum of Natural History. Anne is a taxonomist working on the classification of Penthaleidae, to which the RLEM belong. He is also visiting America where he will present a talk on the effect of avermectin on dung beetles in Australia.

Professor H. Niemeyer also spent some time at the CSIRO talking about insect resistance on his way east to attend the Applied Entomological Research Conference.

John VAN SCHAGEN
Regional Councillor (WA)

VICTORIA

Monash University, Department of Genetics & Developmental Biology

Work on mitochondrial DNA variation in *Helicoverpa* species is up and running after many teething problems. Preliminary data are encouraging for the usefulness of this technique in elucidating population structure, including movement patterns.

Ms. Merrin Spackman joined the department in April from the Molecular Biology/Physiology Section of CSIRO Entomology. She has a Post-graduate Research Fellowship from the Cotton Research and Development Corporation and for her Ph.D. studies she will be assessing the value of mtDNA variation in detecting seasonal migration of populations of moths in cropping areas.

In collaboration with Ary Hoffmann at LaTrobe, the department has begun an investigation of the genetic basis of stress resistance variation within and among *Drosophila* populations. With the help of a keen undergraduate, Monika Doblin, it is proposed to assess the contribution of both the major heat shock protein loci and the

gene encoding the heat shock transcription factor.

Ballarat University College, Department of Biological & Chemical Sciences

Neil Hives, Barry Kentish and helpers went off to Cape Otway for the week before Easter to capture more litter and soil invertebrates as part of a current study of the fauna of the Otway National Park.

Monash University, Department of Ecology & Evolutionary Biology

The group looking at plant-arthropod interactions stuck its collective head up for the first time at the entomology meeting in Hobart, even though their current projects involve non-insect arthropods or, even worse, plants ! Shelley Rozario and Dugal Wallace are both continuing work on their Ph.D. projects on mites and domatia. Shelley is just back from Merbein after doing her summer sampling on mite use of domatia in the grapevine germ plasm collection. She is breathing more easily after receiving an ADCSS scholarship from DEET. Dugal is trying to perfect the art of rearing *Typhlodromus occidentalis* for use in laboratory experiments on leaf domatia. Dave Walter rested on his laurels only momentarily after winning the prize for best presentation at the Hobart meeting. He made the transition from wine-tasting back into the mite realm almost straightaway and, among a half-dozen or so projects, is examining the influence of leaf morphology on mite distribution and abundance. Paul Grostal is in the final throes of his Honours thesis. It looks like Paul has produced the first evidence that domatia are important in the reproduction of predatory mites and can increase their efficiency in consuming spider mites. Matt Manning has finished his Honours thesis on macrochelid mites and is now slaving away sorting berlese extracts from Christmas Island. Kelly Raymond has just started a Ph.D. project, funded by CONCOM, on the biology of the environmental weed bridal creeper (*Myrsiphyllum asparagoides*), which is aimed at containing this nasty plant through biological control. Pete Green, a Ph.D. student who has been working on red land crabs (OK...close enough to insects !) in rain forest on Christmas Island, has reluctantly returned to Monash after 3 and a half years of live-in study on that island paradise. He has one last trip back in late May and then it's write, write, write. In July, Dennis O'Dowd is escaping the pandemonium to go on study leave to Korea, where he will work with Bob Pemberton of the Asian Parasite Laboratory.

In the Limnology lab, Sam Lake, Barbara Downes and Sabine Schreiber are looking at habitat patchiness and species diversity of fauna (mostly insects) in the Steavenson River, near Marysville. Habitat patches are individual stones; in a massive sampling program last year, species richness was related to variation between stones in epilithon (algae + bacteria + fungi) cover, stone characteristics (shape, surface heterogeneity and texture) and physical environment (water velocity and depth). This summer past, we manipulated all of these variables in a controlled experiment to test the contribution of each to species richness. Answers are still very much in the bottles. Sabine, Sam and Gerry Quinn are tackling a similar study of the fauna of Lake Purrumbete, out Colac way. They are comparing rates of colonisation of stones by lake fauna with those of the similar fauna of Curdies River, which flows into Purrumbete. Of the Ph.D. students, Ben Gawne is writing up his work on the interaction between a caddis grazer (*Agapetus*) and its patchy, algal food source on stones in the Taggarty River, near Marysville; and Shane Brooks is examining the response of animals to disturbance from flooding in the Lerderderg River, to understand how insects recolonise scoured stream bottoms so quickly.

Department of Food & Agriculture, Institute of Plant Sciences, Burnley

Garry McDonald, Robyn van Heeswijck and Jim Woodward attended the 2nd Australian Workshop on the Ryegrass Endophyte in April at Hamilton. The workshop dealt with all the agronomic, animal health and entomological aspects of endophyte. Considerable time was committed to discussing the implications of endophyte and its toxins for Australian pasture pests and the exciting possibilities of how the endophyte may be genetically manipulated to improve its insecticidal properties. During April, Garry was also delighted to receive the LaTrobe University Medal for Outstanding Ph.D. research for his thesis entitled "The phenology, ecology and movement of the common armyworm, *Mythimna convecta* (Walker) (Lepidoptera: Noctuidae) in eastern Australia".

Now that the autumn rains have finally arrived, the battle to beat the pasture pests is under way in earnest. Projects aimed at the genetic enhancement of the entomopox virus of blackheaded cockchafer (BHC) (David Eagling, Robyn van Heeswijck and Garry McDonald, in collaboration with David Dall of CSIRO Entomology) and also at the ryegrass endophyte for BHC and black field cricket control (Robyn van Heeswijck and Garry McDonald) have sent Anthony O'Toole and Pam Hurst into frenzied efforts to develop an effective artificial diet/medium for BHC for bioassaying purposes (any hints appreciated).

Janet Horne will be away from Burnley for some time on maternity leave and Paul Horne will continue her work on control of slugs in pastures. Paul is still involved in work with parasitoid wasps as biocontrol agents for potato moth. Hopefully he will be

mass-rearing wasps for the Yemen as part of a CABI project, and, with the help of Andrew Henderson, convincing Victorian potato growers to use them as part of an IPM strategy. Alan Yen (Museum of Victoria) and Paul are also beginning a project to survey invertebrates of both native and pasture grasslands west of Melbourne.

Andrew HENDERSON & Alan YEN
Regional Councillors

NORTHERN TERRITORY

DPIF-Quarantine and Inspection

Several lepidopterists have visited Darwin in recent months, and Ted Fenner caught up with Steve Johnson and Peter Valentine of Townsville. They found some spare time during work trips to pursue butterflies, seeking especially the lesser known Top End species.

Hermes Perona has been taking advantage of the wet season (although a poor one) to build up a beetle collection, including braving mossies and sandflies to man a light sheet in various locations.

DPIF-Weeds Branch

Colin Wilson recently attended the International Symposium on Biological Control of Weeds, held in Christchurch NZ, where he presented a paper on the *Mimosa pigra* program. During the poster session he compromised on the duty of manning two separate posters displayed at opposite ends of the room, by standing next to the bar which was situated midway between the two. The posters proved enormously popular, judging by the numbers of delegates jostling to approach Colin.

For those of you familiar with the 1950s entomological monster movie "Mothra" in which a rampaging misunderstood caterpillar pupates against the Eiffel Tower, beware! A mosquito-sized successor called *Neurostrota gunniella* is capable of feats almost as astounding. Released in the NT in 1989 against mimosa, it has recently turned up infesting a single mimosa plant in the Arafura Swamp in central Arnhem Land, 300 km upwind of the nearest known mimosa thicket. The Weeds Branch are now confidently proclaiming that every mimosa plant in the NT is infested with this super-moth.

Wendy Forno of CSIRO in Brisbane was a recent visitor to the Top End, finalising details for the forthcoming International Workshop on Management of *Mimosa pigra* to be held in Darwin.

Successes notwithstanding, the recession is catching up with biocontrol of NT weeds. A review by an independent consultant, paid for out of biocontrol funds, is underway with a view to pruning expenditure. Large-scale herbicide applications continue unabated.

DPIF-Entomology

The section is still struggling to attend to all demands for assistance or information required by industry, government and the public, and there is little hope that we may soon recruit an extra entomologist to swell ranks by 50%. The poor rainfall over the wet season nevertheless kept everyone fully occupied and somehow Jaye Layland managed to write an extension bulletin, a conference paper and a scientific paper on various aspects of *Thrips palmi*, in addition to addressing a public meeting in Katherine and holding a seminar in Darwin on the same topic.

Neil Gough of QDPI visited the Top End for a week to investigate the budding ornamental industry. Unfortunately the only cyclone of the wet season struck while he was here and made field work soggy and miserable. Neil visited nurseries and cut flower producers, addressed two public meetings, held a seminar and conducted a workshop on mites for departmental personnel. He even managed to have a few hours relaxation at Litchfield Park and to report a stolen and abandoned vehicle to the police.

Stuart Smith visited the Douglas-Daly area for a growers' field day and a departmental open day.

CSIRO-Division of Entomology

The Mimosa Formation Bogging Team, blessed by an abnormally dry wet season, have managed to keep body, soul and 4WD together over the last few months, although cyclone Neville's recent attempts to mimic the path of Tracy quickened the heart rate for a day or so. Releases of the mimosa weevil *Apion aculeatum* continue amid the encouraging news that the little dears are breeding in the field. The only sour note is that the lack of wet season rain has suppressed flowering, which makes it rather hard to establish a flower feeding beetle. The 180 mm of rain dumped by the cyclone and the wet weather left in its wake should go some way to correcting this problem and we are looking forward to an interesting end to the wet. Field populations of the stem boring gracillariid, *Neurostrota gunniella*, have also suffered as a result of the dry weather, throwing Grant Farrell's sampling program into some disarray. Some unkind souls have commented that disarray is his normal state, but he has replied that it's all part of the grand plan and he needs those low density data points anyway.

Honorary entomologist Mark Lonsdale, embarrassed by his key role in the "Great Bogging" of January 1992, has done his best to avoid field work since. He has even taken to leaving the Territory. In February he gave an invited paper, "The Impact of Weeds in National Parks", at the First International Weed Control Congress in Melbourne. Independent reports suggest the paper was well received, but all we could get out of

Mark when he returned was how good the coffee shops in Melbourne were. Barely back in the Territory long enough to thaw out, he was off to Brisbane for meetings to discuss rubber vine research strategies.

Visitors are normally infrequent in the wet season, but Wendy Forno, Mic Julien and Bill Parsons were in the Territory in mid April. Mic stopped in at TERC on his way out to Jabiru for a regular visit of the Kakadu salvinia project. Wendy joined Mic for a few days before returning to Darwin for the remainder of the week to discuss future directions of the northern Australian weeds project. Bill spent a week in Darwin reviewing the three weed projects that CSIRO is involved with in collaboration with DPIF. He spent a day at TERC, including a morning in the field with Grant Farrell and Mark Lonsdale. Lisa Knight has been temporarily added to the team. Lisa has the glamorous and intellectually taxing job of processing *N. gunniella* samples. Well somebody has to do it. Lisa will be complaining about mimosa prickles and blunt scalpel blades until mid year.

CSIRO-Division of Wildlife and Ecology

Alan Andersen has completed ant and termite surveys at Lawn Hill station in the Queensland Gulf country as a consultant for CRA mining. Still on the consultancy trail, he has been awarded a two year consultancy from OSS to look at the role of ants in minesite restoration in the Ranger Uranium Mine area. Alan received a visit from Alan Yen (Museum of Victoria), who is currently writing a report on insect conservation in Australia, and is expecting visits from intrepid entomologists Steve Shattuck, Peter Cranston and Penny Gullan next month.

But here's the big news! Local student ant enthusiast Ben Hoffman has re-discovered the extremely rare *Diacamma* in the Darwin region while fishing from the banks of the Howard River. (Odd indeed how often the subject of fishing appears in these reports.)

NT Health-Medical Entomology Branch

Just when we thought we were going to have a very rapid end to the wet season and a speedy demise of the normal post-wet mosquito problems, cyclone Neville filled up the swamps and creeks and brought the mosquito problems back with a vengeance. Paul Donaldson has had to continue the helicopter applied insecticide control program against salt marsh mosquitoes well into the wet season this year because of the dry nature of the wetland habitats around Darwin.

Paul and Dave Logan have been braving the bull-terriers in the rural back-blocks to conduct an *Aedes aegypti* survey. They have amassed a large number of samples and are looking forward to wading through the identifications to confirm the absence of this mosquito vector in the NT. Their survey has been backed up by Gwenda Hayes doing a vulnerable points *Aedes aegypti* survey which includes all the transport companies, tyre yards, nurseries, caravan parks and the port areas in Darwin.

In late February Gwenda and Peter Whelan investigated an arbovirus outbreak in Nhulunbuy. To date there have been over 160 arbovirus-like cases. It probably wasn't a coincident that the transmission of both Ross River Virus and Barmah Forest Virus dropped rapidly after their visit and discussions with the local authorities on vector control measures. Mosquitoes collected for virus studies in Nhulunbuy have already yielded one isolate of Ross River Virus and Barmah Forest Virus from two different mosquito species. Wendy Kelton has been busy processing mosquitoes for virus isolation from the Katherine region and organising the mosquito monitoring data from the Nhulunbuy outbreak to look at possible reasons for the transmission.

Dave Logan and Helen are pleased to announce a new addition to their family in the form of Tahlia Jade, a beautiful 2.75 kg baby girl born early March. Congratulations to the new parents.

NT Museum

The "wet" that scarcely happened has been a quiet time in the Museum and for local insect life. A burst of dragonfly activity in early April, usually heralding the end of the "wet", preceded the three or four wettest days of the season.

The failure of the monsoon was a blessing from Alice Wells' point of view when, together with David Cartwight, she joined the Royal Geographic Society of Queensland's wet season expedition to the Jardine River region of Cape York in February to collect caddisflies. Good collections of caddis adults and immatures were made. The discovery, only the afternoon before departure from Cape York, of the immatures of *Hyalopsyche disjuncta* (hitherto known only from adult males) has only added to the puzzle surrounding the relationships of the family Hyalopsychidae.

Other field work in the last few months has included trips to Kakadu National Park and Berry Springs Wildlife Park. An Easter trip to Litchfield Park has significantly reduced the proportion of caddisflies "endemic" to the Alligator Rivers Region; a number of species hitherto known only from Radon Springs, Kakadu NP, are now known to occur in the smaller streams at Litchfield. Many of Kakadu's "endemics" are likely to go this way as more is known of the Top End invertebrate fauna - if more is known...

Jenni Webber defected briefly in April to the Australasian Zoological Conference at Currumbin Sanctuary. Did they mention invertebrates...? Yes!

Peter Dostine, OSS Jabiru, visited the Museum to deliver light-trap samples to be sorted by the ever-willing Alice Wells. Hermes Perona, NT DPIF, has been in to use the

collection, and Alan Yen, NMV, came to talk about invertebrate conservation.

OSS-Alligator Rivers Region Research Institute

The Biological Monitoring group is hosting an ANU Honours student, Rod Hardwick. Rod is working on the application of pupal chironomid exuviae to biological monitoring in streams of the ARR. Co-supervisor Dr Peter Cranston (ANIC) is expected in Jabiru in May. Recent visitors included Dr Richard Marchant (NMV), who is in the Top End to monitor the progress of PhD student Michael Douglas. Michael is working on the effects of forest burning regimes on temporary stream communities under the aegis of CSIRO Wildlife and Ecology.

Dr Greg Rippon has been attending a middle management course, and in his spare time organising experiments on the toxicity of tailings from Ranger Uranium Mine.

Peter DOSTINE
Regional Councillor

SOUTH AUSTRALIA

South Australian Department of Agriculture

Gabriella Caon, Technical Officer in the Entomology Unit, returned to work in April after 12 months maternity leave. Dennis Hopkins visited the Institute of Plant Sciences, Burnley, on April 1, as part of a WRDC panel to review projects on slugs and cockchafers.

South Australian Museum

Archie MacArthur, a volunteer in the Entomology Section, has received an ABRS grant to revise the *Camponotus nigriceps/consobrinus* group. This will involve some electrophoretic work with members of the Evolutionary Biology Unit at the Museum.

Penny Greenslade worked at the Museum from 16-27 March on selection and registration of sites of invertebrate significance in connection with an Australian Heritage Commission grant. Eleven South Australian sites have tentatively been selected.

Eric Matthews, Jan Forrest and David Hirst (Arachnology) spent two weeks in March in various mallee areas for general collecting and to get an idea of endangering processes. It is clear that the latter are mainly invasions by introduced pests, notably rabbits, honeybees and weeds.

The University of South Australia (Mosquito Research Group)

Members of the group weathered various transitions over the Christmas season. Alan Mead retired as Vice-Chancellor and became the first Provost of the University. One of his major aims is to make a film showing *Mesostoma* (flatworms) species which are significant predators of mosquito larvae. He continues to supervise, together with Lawrie Bennett, Grant Fleming's PhD program on the *Mesostoma* species as control agents for small environment mosquitoes, particularly *Aedes aegypti*.

Mike Kokkinn went on six weeks study leave to South Africa to learn about malaria control there. He spent time at the Institute of Medical Research in Johannesburg with Richard Hunt and Maureen Coetzee, and then went to the Tropical Diseases Institute in Tzaneen where he spent time in the field with control teams as well as learning to distinguish the four *Plasmodium* species in human blood films. Last port of call was the Medical Research Council laboratory in Durban where he spent time with Brian Sharp and colleagues.

The laboratories at North Terrace have been expanded and the group patiently awaits the fittings to be put in. Meanwhile, we worry quietly about too much moisture near our books, reprints and electrical equipment in the old laboratory which is now a quarantined mosquito culture facility.

The Flinders University of South Australia (School of Biological Sciences)

Shaun Hood is doing his Honours thesis on the host selection behaviours used by the egg parasitoid *Trissolcus basalis* (Scelionidae) in locating egg batches of its host the horehound bug, *Agonoscelis rutila* (Pentatomidae).

Peter Hudson continues to measure the metabolic rates of lycosid spiders that inhabit salt lakes and Cathy Smallridge is beginning a Master's degree with Mike Bull on the population dynamics of reptile ticks.

South Australian Health Commission

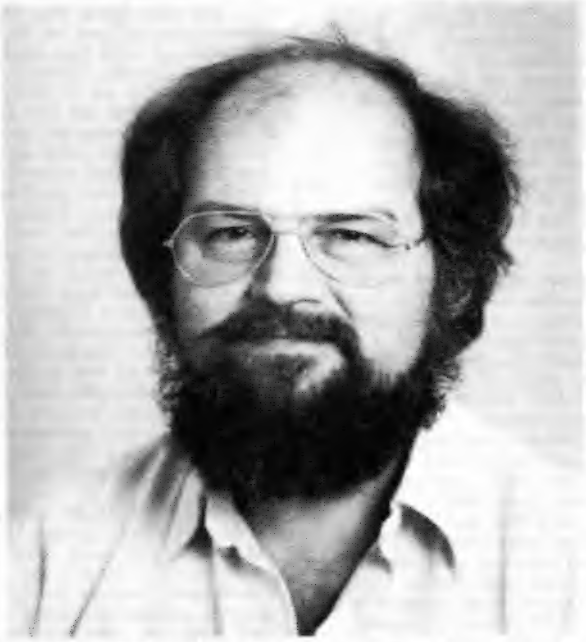
A single case of Murray Valley Encephalitis is suspected to have occurred, but is still under investigation. In early February a 43 year old woman developed fever, rash, arthralgia and severe headache 10 days after a houseboat holiday on the River Murray on the Victorian side of the border. A presumptive diagnosis of MVE was made on the basis of serological testing of one blood sample, and additional samples are now being tested to clarify the picture.

To combat the growing problems of insecticide resistance in headlice, South Australian and Tasmanian Health Departments have introduced recommendations for the rational use of pediculicides. The recommendation is to use malathion-based products exclusively for the three-year period 1992-1994, and then to change over to a different product for the following three-year period. It is expected that this rotation policy will be nationalised in the near future, following endorsement by the NHMRC.

Entomology Group, Department of Crop Protection, University of Adelaide

The inaugural Professor of Crop Protection, Professor Otto Schmidt, arrived to take up his position on 10 March. Otto has a distinguished record as an entomologist and molecular biologist and joins the newly multi-disciplined Department which has come about from the merger of the large entomology, plant pathology and weed science groups. He was welcomed at a party held on the first Friday after his arrival which was attended by about 60 people from around the Waite campus.

Otto's scientific interest has been in molecular and developmental genetics. He did his PhD work at the Department of Zoology, University of Freiburg, Germany, analysing pattern formation and polarity in early embryos of the leafhopper *Euscelis plebejus*.. This was followed by postdoctoral work at the Department of Molecular Biochemistry and Biophysics, Yale University, involving gene expression and RNA processing in yeast and *Drosophila* using recombinant DNA technology. From 1982 to this year he was on the academic staff of the Genetics Department, University of Freiburg. His main research included studying the molecular and genetic control of cell proliferation using *Drosophila* tumour mutations as a model system. Also, during this time he has worked extensively on immune recognition and the evolution of immune evasion in insect parasitoid-host interactions. From 1989 to 1990 Otto was a visiting scientist at the Department of Microbiology, Stockholm University.



Otto SCHMIDT, the new Professor of Crop Protection at the Waite Institute, University of Adelaide.

At the Waite Institute he will be working on the molecular and genetic analysis of intimate organismal interactions that occur in insect endoparasitoid-host relationships. In solitary wasp endoparasitoids, "symbiotic" polydnaviruses or virus-like particles (VLPs) ensure the survival of immature wasps within their habitual host organisms. Otto was asked for more information on the system and his reply was "I am analysing the evolutionary significance and protective mechanism of particles in parasitoid-host interactions by cloning the genes that code for the VLP-proteins within different parasitoid species. In my experimental system the protective function of VLPs is explained by a molecular mimicry of host structures that are part of the immune recognition system. I am presently testing this assumption by cloning and functionally dissecting the host proteins and investigating their role in immune recognition and signal transduction".

Otto not only brings unique and exciting expertise to the Waite Institute, but also to the Australian entomological community as a whole. He is currently assembling a research group that will utilise the existing expertise of Drs Austin and Keller on parasitoid systematics and biology of parasitic wasps.

Entomology has also seen the arrival of four new PhD students in recent months. Mr Azhar Saeed from Pakistan has joined Andy Austin's research group to work on the systematics and biology of the cotesiine genera (Braconidae); Jörg Kitt from Germany and Wanja Kinuthia from Kenya have joined Derek Maelzer's laboratory. Jörg will be working on classical biological control of rose aphid, while Wanja intends to study the ecology of *Aphis nerii*. Roya Talaei from Iran has started work with Roger Laughlin.

Dr Yugal Prasad has started work with Mike Keller on host stage selection by the braconids *Cotesia rubecula* and *Apanteles ippeus*. Derek Maelzer is currently on study leave in warmer climes and is spending time at the University of Queensland and James Cook University.

OVERSEAS NEWS

New Zealand

In February and March 1992 Pamela Lovis, Curator (Interpretation), Natural Environment Department, at the National Museum in Wellington, undertook a programme of study at the Queensland Museum, Brisbane funded by a Queen Elizabeth II Technician Study Award. The programme was supervised by the ever-enthusiastic Dr Geoff Monteith, Senior Curator in Lower Entomology. Pamela participated in the museum's five week exhibition "Living With Insects - Friends and Foes". She was impressed by what she described as a magnificent and highly successful exhibition (75 000 visitors). The development of the exhibition as a co-operative venture between all the entomological organisations in Queensland showed that such co-operation is fruitful, mutually beneficial and can yield exciting results. There was a good lesson for New Zealand and hopefully we can follow this example sometime in the future.

Pamela reports that the exhibition's variety and quality of presentation was also impressive. She reports:

'Highlights for me were the house and garden reconstruction (better than the BMNH version!), the extensive insect zoo (especially those giant burrowing cockroaches), an innovative exhibit on beetle biodiversity and the spectacular "Butterfly Man of Kuranda" exhibit featuring F.P. Dodd's insect collection.

The educational programmes accompanying the exhibition were impressive for their extent, quality and above all the enthusiasm of the museum staff, particularly Heather Janetzki. Activities included workshops for teachers and the public, school class visits, craft activities and a "Build A Bug Competition". The teacher workshops were informative, innovative and fun to do and their success has inspired me to plan a similar programme at the National Museum of New Zealand for the future, based on the Queensland Museum model.

My study programme also gave me several opportunities for field collecting. This was particularly exciting for me as my prior experience in this area was limited. I now know how to dig up a bull ant colony and have been initiated into the joys of light trapping, spot lighting and pit fall traps. The abundance and diversity of insect life was overwhelming and I am now well and truly convinced that "wetas" are not unique to New Zealand, contrary to popular belief over here.

I would like to take this opportunity to thank all the entomologists I met in Queensland for enthusing me and inspiring me about entomology. In particular, thanks are due to Geoff Monteith, Heather Janetzki, Geoff Thompson and also Robert Raven, Phil Lawless and Val Davies of the Arachnology Department at Queensland Museum. Hopefully the Queensland/Wellington entomology connection will prosper in the future.' (Pamela Lovis).

John TENQUIST
NZ Correspondent

Papua New Guinea

Entomologists Fred Dori, John Moxon, Bob Prior and Ray Kumar met at Lowlands Agricultural Experiment Station, Keravat from February 18-21, under the chairmanship of Ted Sitapai, Director of Agricultural Research, DAL. The scientists discussed the use of six million Kina EEC grant for research into coconut pests in PNG. A steering committee under the chairmanship of Fred Dori was set up to oversee the initial stages of the project. On his way back Ray visited the DAL quarantine offices at Rabaul and held discussions with the staff.

Don Sands, CSIRO, Brisbane, arrived in Port Moresby on 8 March for a three-week visit. He called on the Directors of Agricultural Research and Protection and held discussions with Fred Dori, Samson Laup and Ray Kumar. Fred and Don travelled to Western Province, East and West New Britain, Morobe Province, Eastern Highlands and Kainantu, collecting and rearing parasites of the banana skipper moth. Don has since arrived safely back in Brisbane. Ray visited the Grain and Rice Development Project at ERAP (Markham Valley) on March 17 and held discussions with the Korean entomology volunteer, An Sang-Hyun, and Laury Fooks, coordinator of the project. The weed *Rottboelia exaltata* was identified as a problem weed in corn fields in the Markham Valley. A major entomological success in the last 18 months has been the identification of "borer-free periods" for the planting of maize crop.

The PNG Chief Agriculture Quarantine Officer, David Kanawi and Ray Kumar visited (March 23-31) rice mills in NSW and Victoria travelling by road from Melbourne to Echuca, Deniliquin, Leeton and Griffith. The team was greatly impressed with the high standards of mill hygiene, minimal use of pesticides, up to date residue analysis facilities and computerised quality control laboratories. The team also met their counterpart DPI officials and held discussions with Robyn Delves on *Trogoderma variabilis*. At Brisbane discussions were held with the QDPI officials, Merv Bengston, Bryan Cantrell, Dick Drew and Neil Heather. The team also called on Angus Macqueen, Mick Julien and Wendy Forno. Discussions on the biological control of *Rottboelia* have continued with Wendy. Contacts were also established with the new Director of CRCTPM, Dr Geoff Norton. The team wound up the visit with calls on Miss Kate McLay, Training Consultant, DPI and David Licence, about the possibility of running a fumigation course for PNG quarantine officers.

A major conference on Conservation Needs Assessment (CNA) was held at Madang from April 5-11. The conference

focussed on (1) biodiversity assessment, (2) conservation in the social context, and (3) plans for management and developing a long-term conservation strategy for PNG. Samson Laup was the counterpart for Invertebrate Zoology. On their way back Scott Miller (Chairman, Entomology Department, Bishop Museum, Hawaii) and his Assistant Director of Research, Allen Allison, stopped in Port Moresby and held discussions with Ray Kumar, Fred Dori and DAL Secretary, Paul Sai'i and visited the DAL insect collections.

NEWS FROM AFFILIATED SOCIETIES

Entomological Society of NSW Inc.

The Christmas function was at last held 22-23rd February. 26 people attended the collecting trip to Wheeny Ck. Apart from the mosquitoes and horses the weekend was enjoyable.

It is hoped that this function can be held a little earlier this year.

The Annual General Meeting was held in March with the following members elected to council:

President:	Graham BROWN
Vice President:	Murray FLETCHER
Secretary:	Alison NICHOLS
Treasurer:	Ted TAYLOR
Business Manager:	Mary Ann TERRAS
Public Officer:	Mary Ann TERRAS
Editor:	Dan BICKEL
Circular Editor:	Alan WESTCOTT
Councillors:	Christine STONE
	Martin HORWOOD
	Doug RUGG
	Angiolina CONDELLO

An illustration of the cerambycid *Paradisterna plumifera*, by Alan Westcott, was selected for the Society's emblem for 1992. Graham Brown gave the Presidential Address entitled "Entomology Here and Now" and a summary has been published in the Society's Circular.

Debbie Kent spoke at the April meeting on eusocial behaviour in *Austroplatypus incompertus* (Curculionidae: Platypodinae), the first record of eusociality in Coleoptera.

The May meeting is to be held at the Ku-ring-gai Wild Flower Garden at St Ives. This is a native garden under the control of Ku-ring-gai Municipal Council and the meeting will be addressed by Jonathon Howard, the Council's Interpretive Officer. Visitors are always welcome at Society meetings.

Graham BROWN
Representative Councillor

Entomological Society of Queensland

At the Annual General Meeting, held on March 9, Robert Raven gave his out-going Presidential Address entitled, 'Redback spiders, black widows and their kin'. At the same meeting the following office bearers for 1992 were elected:

President	Graham WHITE
Senior Vice-President	Richard DREW
Honorary Secretary	Judith KING
Honorary Treasurer	David HANCOCK
Publications Committee Convenor	Christine NEALE
Councillors	Tim HEARD
	Angus MACQUEEN
	Des FOLEY

Robert RAVEN remains on the Society's Council as Junior Vice-President.

The main business at the meeting held on April 13 was an address by National Parks and Wildlife Officer, Ric Nattrass, on the Department of Environment and Heritage's initiative, 'Nature Search 2001'.

Christine NEALE
Representative Councillor

The Entomological Society of Victoria Inc.

The General meeting held in February was addressed by Dr Don Dahlsten from the University of California, Berkeley. Don has been a visiting scientist at the Keith Turnbull Research Institute (Department of Conservation and Environment) and his talk was on the biological control of insects on trees with special reference to the Australia-California connection. At the April meeting Robin Adair from the Keith Turnbull Research Institute spoke on the South African insect fauna with potential for biological control of Boneseed and Bitou Bush in Australia.

The Council of the Society has accepted the recommendation from the Zoo LeSouef Memorial Award subcommittee that no award would be made for 1991/92. Nominations remain current for three years. Nominations for 1992/93 should reach the Secretary of the Society, Mr Ken Walker (Museum of Victoria, 71 Victoria Crescent, Abbotsford, VIC 3067) by 31 October 1992.

Ross FIELD
Representative Councillor

1992 Listing of Postgraduate Projects in Entomology
An Australian Survey

My thanks to all those people who responded to my request for details of postgraduates and their entomological topics. At the time of writing, 24 replies have been received from the 30 institutions canvassed and includes 259 projects. At this time last year, 216 projects had been collated.

I have been greatly assisted in this task by Julie-ann Short (CERIT), who has entered the data and kept the replies in order.

A supplementary list will be published in the August *Myrmecia*.

Jenny ANDERSON

QUEENSLAND

University Of Queensland
(Dr M. Zalucki. & S. Mamin)

Department of Entomology

BALLANTYNE, L. Revisional studies on the Luciolini (Coleoptera: Lampyridae: Luciolinae) (PhD).

BURWELL, C. Systematics of some Australian Entedoninae (Hymenoptera: Chalcidoidea: Eulophidae) (PhD).

CORCORAN, R. Physiological and behavioural mechanisms of heat tolerance of *Bactrocera tryoni* (MSc).

COUSINEAU, M. Homogeneity among geographically distinct populations of *Aedes (Halaedes) australis* (Erichson) (PhD).

ELSON-HARRIS, M. The systematics of Tephritidae (Diptera) based on comparative morphology of immature stages (PhD).

FERNANDO, P. Aspects of the ecology of *Aphytis lingnanensis* Compere and *A. melinus* DeBach (Hymenoptera: Aphelinidae) females, parasitoids of *Aonidiella aurantii* (Maskell) (PhD).

FREEBAIRN, C. The sex determination, biology and taxonomy of a new genus of mermithid nematodes parasitising Australian mosquitos (PhD).

GRIFFITHS, M. Aspects of the life history and biology of the Red Cedar Tip Moth (*Hypsipyla robusta*) (PhD).

KHAN, S. An evaluation of the host specificity and other aspects of the biology of *Epiblema strenuana* (an introduced biological control agent of the weed *Parthenium hysterophorus*) - its future potential. (PhD).

MACRAE, F. The biology and ecology of mud daubing wasps and their nests. (BSc Hons).

MAYNARD, G. Studies on Australian bees of the genus *Leioproctus* Smith (PhD).

MILES, M. Aspects of the population biology of the polyphagous bug (MSc).

MILNE, J. The role of thrips in the transmission of pollen-borne viral diseases and the relations of these thrips with their host plants (PhD).

MUDA, R. Pest management and physiological responses of storage beetles to azadirachtin, alone and combined with synergists and/or conventional insecticides. (MAgSc)

OLLEY, L. Gall fauna of mangroves. (PhD).

PETERS, B. Termite-fungi interactions (MAgSc).

QUIMIO, G. Aspects of the biology and ecology of the fruit fly parasitoid, *Biosteres arismes* (Sonan). (MAgSc).

ROSS, M. Ecology of *Euploea core corinna*. (BSc Hons)

RUNGROJWANICH, K. Biology and ecology of fruit fly parasitoids in Queensland (PhD).

SAYABOC, P. Biology and ecology of parasitoids attacking stored grain beetles. (MAgSc).

SPARKS, D. Biological control of fireweed: A pre-release study (MSc).

TITMARSH, I. Population dynamics of *Heliothis* - factors influencing survival of immature stages on various host plants (PhD).

VAN KLINKEN, R. The genetical ecology of some endemic fruit-breeding rainforest *Drosophila*. (PhD).

VIJAYSEGARAN, S. Studies on the biology of *Bactrocera tryoni* and *B. cucumis* (Diptera:Tephritidae) and their parasitoids. (PhD).

WALLACE, H. Insect pollination of *Macadamia* (PhD).

ZHEN, CHANG SHENG. Laboratory and field studies of the control of *Heliothis* with natural insecticides (PhD).

Department of Botany and Entomology

BOSSELMANN, A. Response of *Azadirachta indica* to environmental factors (PhD).

Department of Entomology and Anatomy

PAVEY, C. Feeding ecology of insectivorous bats, with emphasis on prey specificity (PhD).

Department of Entomology; Physiology & Pharmacology

MEURANT, K. Study of the prothoracic gland/Corpus allatum/Corpus cardiaca ring complex of the Australian blowfly larvae *Lucilia cuprina* (PhD).

Department of Microbiology.

KLOSE, M. Transmission of tobacco streak virus and other pollen-borne viruses by thrips. (PhD)

Tropical Health Program & Department of Entomology

FOLEY, D. Investigations of the *Anopheles punctulatus* complex (PhD).
MUIR, L. Olfactory attractants for *Aedes aegypti* (PhD).

Gatton College (Dr E. Hassan)

Plant Protection Department

ABBOTT, R. The effect of insecticide sprays on bee activity, fruit set and yield in cucumbers. [B App Sc (Hort Tech)].
DARVENIZA, H. Study of pollination in cucumbers. [B App Sc (Hort Tech)].
GRAHAM-SMITH, S. The effects of Endosulfan, Dipel and Hallmark on *Heliothis* egg and larval parasites. [B App Sc (Rur Tech)].
KAHENYA, A. The influence of carbohydrate on population dynamics of honey bee (*Apis mellifera* L) colonies (MAgrSc)
McGUIRE, D J. The effect of management practices on yield, pollination and bee activity in zucchinis. [B App Sc (Hort Tech)].
SCHLACK, S. Quarantine status of the fruit-fly *Atherigona orientalis* (Schiner) in export cucurbits (MAgrSc)
WILLS, D. A study of pollination in zucchinis including honey bees. (M Agr Sc).

James Cook University (Prof. R.E. JONES)

Zoology Department

ALBIN, M. Biological control of an introduced tropical weed. (MSc).
BENSON, L. Detrital processing and the ecology of rainforest stream insects. (PhD).
BRABY, M. The ecology and reproductive strategies of satyrine butterflies (*Mycalesis* species).(PhD).
CLAYTON, P. Ecology of waterfall insect communities.(PhD).
DAVIS, A. Ground-dwelling rainforest ant communities.(MSc).
DERRINGTON, C. Herbivorous insect communities on mangroves. (GDip).
DOHERTY, W. Factors limiting the distribution and dynamics of two *Culicoides* species. (PhD).
DOWNES, M. The biology of a subsocial spider (*Badumna candida*). (PhD).
HURLEY, M. Insect herbivory on tropical rainforest stinging-trees (*Dendrocnide* spp).(MSc).
JACKSON, R. Spatial and temporal variation in herbivory on trees in the genus *Alphetonia*. (PhD).
JOHNSTON, M-L. Biology and impact of homopteran species on *Leucaena leucocephala*. (MSc qual)
KAY, I. Developmental biology of *Eysacoris trimaculatus*.(MSc).
OVERTON, M. Inheritance of female colour patterns in the nymphalid butterfly *Hypolimnas bolina*. (PhD).
PRASAD, M. Feeding ecology of herbivorous coccinellids (*Epilachna* spp). (PhD).
RAE, D. Population dynamics and ecology of sugarcane mealybugs. (PhD).
ROSSER, Z. The role of disturbance in structuring stream insect communities. (PhD).
WILKIE, L. Systematics and ecology of the banana scab moth in Australia and Papua New Guinea.(PhD).
YULE, C. Life cycles and life history strategies of stream insects on Bougainville (PhD).

Griffith University (Dr J. M. HUGHES)

School of Australian Environmental Studies.

LARSON, D. The influence of Brush-turkey incubation mounds on the structural diversity of rainforest invertebrates. (Hons).
MARSHALL, J. Food web structure in rainforest stream pools. (PhD title)
ROGERS, D. The influence between soil moisture and vegetation type on Collembola. (M Phil).
SCHMIDT, S. Gene flow among populations of *Baetis* sp. (Baetidae) in the Connondale Ranges. (Hons).

NEW SOUTH WALES

Macquarie University (A/Prof. D. HALES)

School of Biological Sciences

BLANCHE, K.R. Gall insect communities in relation to soil fertility (PhD).
BLANCO, L. Interactions between aphid saliva and plants (PhD).
CRAVEN, D. Genetic adaptation to captivity. (PhD).
GARCIA, G. Classification of *Paecilomyces* species for use in biological control (in association with UNSW, Department of Biotechnology) (MSc).
HEINS, A.M. Degradation of organochlorine pesticides in soil by white rot fungi (PhD).
HORWOOD, M.A. Comparison of effects of juvenile hormone deficiency and parasitisation in the Australian plague locust (MSc).
LEFEBVRE, M. Responses of honeybees to electromagnetic stimuli (PhD).
LEWIS, F. The biogeography and phylogenetic relationships of Oniscidae (Crustacea:Isopoda) in the South West Pacific. (PhD).
MACKINTOSH, J. Effects of antimicrobial secretions on the microbiota of the Australian Bull Ant (*Myrmecia gulosa*). (MSc)

MILLER, J. Reproductive biology and life history of Australian Onychophora (MSc).
MOULDS, M.S. A revision of the cicada genus *Abricta* (MSc).
OLIVER, I. Quantifying arthropod biodiversity for conservation biology (PhD).
REID, A. Taxonomy of Australian Onychophora (PhD)
ROGERSON, L. Comparison of ant seed dispersal on infertile and fertile soils (PhD).
TERRAS, M.A. Biology and ecology of the red pepper mite, *Siteroptes mesembrinae*, with particular reference to mushroom cultivation. (PhD).
TRIMBLE, J. Antimicrobial properties of secretions from the metapleural gland of *Myrmecia gulosa* (Australian Bull Ant) (Msc).
TURAK, E. *Sitobion* species on grasses and cereals in Australia (MSc).
WATSON, K. Effects of plant substances on ant colony demography (MSc)
WOODWORTH, L. Modelling conservation genetics problems using captive *Drosophila* populations. (PhD).

University Of New England (Prof. W. DANTHANARAYANA)

Department of Zoology

ANNETTS, R. Extraction of litter faunas - a comparison. (Hons)
ASANTE, S. Biological and ecological studies of the woolly apple aphid *Eriosoma lanigerum*, with reference to control (PhD).
COOMBS, M. Flight and migratory potential of *Helicoverpa armigera* and *H. punctigera* (Lepidoptera: Noctuidae) (PhD).
DAVIES, P. Litter of disturbed and undisturbed habitats. (Hons).
DEXTER, E. Conservation status of Australian butterflies. (MSc Prel, jointly supervised with the Department of Ecosystem Management)
HOLDEN, C. Environmental physiology of scorpions (PhD).
HOLTKAMP, R.H. Biological control of *Cassinia* spp., using native scales. (PhD).
JOHNSTON, M. The influence of grazing/management strategies on -tubulin gene in *Trichostrongylus colubriformis/T. vitrinus*. (Hons).
SINK, H. Embryonic development of the nervous system of *Drosophila* (PhD).

Department of Agronomy and Soil Science.

(Dr P.C. GREGG)

BARBER, J. Effects of early season pest control and plant density on cotton growth and yield. (PhD).
BETTS, M.D. Reproductive behaviour and mating disruption of *Helicoverpa* spp. (M. Rur. Sc)
DEL SOCORRO, A.P. Reproductive behaviour and pheromone trapping of *Mythimna convecta*. (PhD).
KIANMATEE, S. Effects of allelochemicals in barley on survival and development of noctuid moths. (M. Rur. Sc.).
NESIC, A. The role of pheromones on the behaviour and reproductive ecology of Australian *Agrotis* species. (PhD).
SPESSA, A.C. Oviposition dynamics and reproductive performance of *Helicoverpa* spp.
STANLEY, J.N. Efficiency of predators of *Helicoverpa* spp. in cotton. (PhD)

Department of Animal Science.

ARMSTRONG, T.P. Habitat selection in *Drosophila buzzatii*. (PhD).
NOOR, R.R. Quantitative genetics of body size in *Drosophila buzzatii*. (PhD).

Department of Ecosystem Management

CLARKE, C. Insect communities in *Nepenthes* pitcher plants in Borneo. (PhD).
NEWLAND, G. Study of butterfly populations on four hilltops in northern coastal New South Wales. (Dip Nat Res).
SUTRISNO, S. Collembola communities in three Australian forest-type canopies. (PhD).

University Of New South Wales (Dr A.M. RICHARDS)

School of Biological Science

DUNSTAN, K. Distribution of arthropods in rainforest remnants in southern tablelands. (B Sc Hons).
GOLETSOS, C. Bionomics and behaviour of Australian aphidophagous Coccinellidae. (PhD).
JACKSON, G. Response of ant community structure to ecosystem disturbance. (PhD).
WILLIAMS, G. Pollination ecology in NSW rainforest. (PhD).

Centre For Entomological Research And Insecticide Technology (CERIT)

McLEOD, L.J. Overwintering strategies and emergence patterns of *Lucilia cuprina* and *Chrysomya rufifaces* in the arid zone of NSW (PhD).

University Of Western Sydney, Hawkesbury (R. SPOONER-HART)

Faculty of Food Technology

PELEA, N. Utilisation of Neem, *Azadirachta indica*, compounds for the control of insect infestation in smoked fish. (PhD).

Faculty of Horticulture

CANT, R. Biology of the Bronze Orange Bug, *Musgraveia sulciventris*. (PhD).
DITCHFIELD, C. Improved strains of the predatory mite *P. persimilis* for integrated mite control in horticultural crops (MSc).
HAIGH, R. Evaluation of Margosan(TM), a commercial neem extract against twospotted spidermite *T. urticae* and chilean predatory mite *P persimilis*. (BSc. Hons).
JOHNSON, S. Field evaluation of *Apis mellifera* in tropical Australia and Indonesia.(MSc).
MASSOUD, M. Biology and population dynamics of *Heliothrips haemorrhoidalis* (PhD).
SINGH, S. Biology and control of the rice leafroller *Marasmia exigua* (Lepidoptera: Pyralidae) in Fiji (PhD).

University Of Sydney
(A/Prof. H.A. ROSE)

Department of Agricultural Chemistry

BUNGARD, S. Biochemical resistance mechanisms in *Rhyzopertha dominica*. (PhD).
LEE, S.E. Biochemical resistance mechanisms in *Oryzaephilus surinamensis*. (PhD).
MILSON, J. Development of methods for studying the hydrolysis of fenitrothion and fenitrooxon by enzymes from grain storage pests. (MScAgr).

Department of Biochemistry.

CHAPPELL, D. Nitrogen metabolism in termites (Isoptera). (PhD)
LU ZHAO. Cellulase in the cockroach *Geoscapheus dilatatus*. (Grad. Dip. Sc.)
SCRIVENER, A.M. Cellulase in the cockroach, *Panesthia cribrata*. (PhD).
VEIVERS, P. Role of symbiont in cellulose and glucose digestion in insects. (PhD).

School of Crop Sciences

LANE, S.A. Development of an integrated pest management system for *Heliothis* in processing tomatoes. (PhD).

Department of Plant Pathology and Agricultural Entomology.

AYASS, A.R. Effects of azadirachtin on monooxygenases. (MAgr).
BARDEN, G.P. Biochemical resistance mechanisms in *Heliothis* spp. (PhD).
CASTILLO PANDO, M.P. Behaviour of the wasp parasite *Trissolcus basalis* (Wollaston), the green vegetable bug egg parasite. (MAgr).
FAIREY, K.D. The taxonomy and biogeography of the moth genus *Pterolocera* (Lepidoptera: Anthelidae). (PhD).
FAULDER, R.J. Systematics and biogeography of the spider genus *Missulena*. (MScAgr).
HERRON, G.A. Investigation of various aspects of hexythiazox resistance in twospotted mite *Tetranychus urticae* Koch. (PhD).
KENT, D.S. The biology and ecology of three species of ambrosia beetles (Coleoptera: Platypodidae) colonising the heartwood of living *Eucalyptus* trees. (MScAgr).
REDFERN, D.J. Monooxygenases of the lesser grain borer, *Rhyzopertha dominica* (F.) (PhD).
RUGG, D. Effects of avermectins on external parasites of sheep. (PhD).
SHELLEY, A.I. Monooxygenases of adults and larvae of the yellow mealworm, *Tenebrio molitor*. (MAgr).
SMITH, G.B. Taxonomy of the Australian nicoletiid silverfish (Thysanura). (MScAgr).
WALKER, J.A. Taxonomy of soil burrowing cockroaches. (MAgr).

Charles Sturt University, Riverina
(Mrs L. BALLANTYNE)

Faculty of Science and Agriculture

BELL, D. Monitoring and modelling Oriental Fruit Moth (*Cydia molesta*) in the Cobram Stone Fruit District, Victoria (MSc).

VICTORIA

Deakin University
(W.S. LAIDLAW)

School of Biological Sciences

The following four projects include insect pitfall trapping and the first three scat analysis also.
ABERTON,J. Long and short term post-fire recovery of fauna in the eastern Otways, Victoria. (Working title) (MSc).
LAIDLAW, W.S. The effects of *Phytophthora cinnamomi* on flora and fauna of the eastern Otways, Victoria (PhD).
MOLONEY, D.J. An investigation of small mammal recolonisation in fire-affected areas of southern Victoria. (PhD).
NEWELL, G.R. *Phytophthora cinnamomi* (Cinnamon Fungus) and its effects on small mammal populations in the Brisbane Ranges, Victoria. (PhD).

University Of Melbourne
(Dr J. MARTIN)

Department of Genetics

ANDREWS, J.R. The function of the suppressor of stoned locus in *Drosophila melanogaster* (PhD).
CAMPBELL, B. Population genetics of insecticide resistance in the Australian sheep blowfly. (BSc Hons).
CHEN, Z.Z. Molecular and cytological studies in dipteran insects (PhD).
CROSBIE, D. Effect of inbreeding in *Chironomus tepperi*. (BSc Hons).

DAVIES, A. Molecular and genetical analysis of Scalloped wings in *Lucilia cuprina* (PhD).
GOODALL, S. The genetic, phenotypic and molecular characterisation of mutants at the Scalloped wings locus of *Lucilia cuprina*. (BSc Hons).
GOSS. P. Computer modelling of changes in insecticide resistance allele frequencies in natural populations of the Australian sheep blowfly. (BSc Hons)
LE COUTEUR, M. Genetic basis of insecticide resistance in *Drosophila melanogaster*. (BSc Hons).
MERAKOVSKY, J. The molecular genetics of *Drosophila* stoned gene (PhD).
NEWMAN, J. Restriction site polymorphism at the Scalloped wings locus of *Lucilia cuprina*. (BSc Hons).
PAKUSCH, M. Sex determination in *Chironomus*. (BSc Hons).
STEWART, R. The genetic and molecular characterisation of a neurologically expressed Ca^{++} binding protein from *Drosophila*
WARR, C. Characterisation of the calmodulin-binding sites in the *Drosophila* TRPL protein. (BSc Hons).

Department of Zoology

DAWS, A. Insect bioacoustics. (PhD)
EVANS, T.A. Evolution of social behaviour in *Diaea* (Aranea: Thomisidae) (PhD).
KING, I. Sound production in the freshwater heteropteran *Micronecta* (MSc).

WESTERN AUSTRALIA

Curtin University Of Technology (Dr J.D. MAJER)

School of Environmental Biology

CONLON, G. The impact of Tasmanian bluegum plantations on litter fauna and litter decomposition. (Hons)
HOULDING, B.J. Integrated pest management in Western Australian strawberry crops (MSc)
PARK, H.C. Role of the termite *Drepanotermes tamminensis* in nutrient cycling in two wheatbelt vegetation types (PhD).
SCOUGALL, A. Efficacy of replanted patches and corridors in the restoration of biota within the Western Australian wheatbelt. (PhD).

Murdoch University (Dr M. CALVER)

School of Biological and Environmental Sciences

ARENA, J. Immunological studies of midge predators. (Hons).
BALLA, S. Life history and strategies of aquatic fauna, nutrient enrichment and water level fluctuations in Perth. (PhD).
CHARLTON, L. Odonata of the Millstream region, WA. (PhD).
LATCHFORD, J. The environmental impacts of physical mosquito control methods in salt marshes (PhD).
QUINLAN, T. Resource partitioning in sympatric scorpions. (Hons).
WELBON, C. Insectivory in the Noisy Scrub-bird. (Hons).

University Of Western Australia (A/Prof. W.J. BAILEY)

Department of Zoology

ANNELLS, A.J. The reproductive biology and mating behaviour of the red-legged earth mite,*Halotydeus destructor*. (PhD).
BERLANDIER, F. Ecological studies on the bluegreen and cowpea aphid (MSc).
DOLVA, G. Survivorship and morphological variation of the cricket *Numbungia balyarta* in response to burning history of the W.A. Jarrah forests (MSc).
LILLYWHITE, J. Immunological studies of insect predation in dung (MSc).
WALDEN, K. The biology and control of the native budworm (*Heliothis punctigera*) in WA (PhD).
WATANASIT, S. Larval competition of the damselfly *Xanthagrion erythroneurum* and its effect on individual reproductive success (PhD).
WIJESURIYA, S. An ecological study of fruit fly populations in north Western Australia (MSc).
YEOH, P. Lekking behaviour of *Ceratitis capitata* (Diptera: Tephritidae) (MSc).

Department of Geography

LOBRY de BRUYN, L.A. The role of ants and termites in modifying the soil properties in naturally vegetated and agricultural environments (PhD).

AUSTRALIAN CAPITAL TERRITORY

Australian National University (Dr P.J. GULLAN)

Division of Botany & Zoology, Faculty of Science

* indicates cosupervision in Division of Entomology, CSIRO.

ARNEY, M.C. Control of *Eriococcus* species (Coccoidea: Eriococcidae) in urban areas (Grad DipSc).
*BALDERSON, J.A. A systematic revision of the subfamily Paraoxypilinae (Mantodea) of Australia. (PhD).

*BERRY, J.A. A revision of the Australasian Eunotinae (Hymenoptera: Pteromalidae) (PhD).
COOK, L. Karyology and reproductive biology of *Apiomorpha* species (Hemiptera: Coccoidea). (BSc Hons).
*DUELL, R. Characterising a bacterial pathogen of scarabaeid larvae. (BSc Hons).
*HARDWICK, R. Tests of the utility of cast pupal skins of Chironomidae (Diptera) in relation to larval benthic communities used in biological monitoring. (BSc Hons)
LEE, W. What determines forager type in honeybees: morphology or genetics? (BSc Hons).
*MILLER, L.R. Systematics of Nasutitermitinae (Isoptera). (PhD).
QIN, T.K. The phylogeny and biogeography of the wax scale insects, *Ceroplastes* species (Hemiptera: Coccidae) (PhD).
*SALEU, L. The biology of the mite *Tropilaelaps clareae* in honeybee colonies of Papua New Guinea. (MSc).
*SMYTH, M.J. The biology of *Dialectica scalariella* (a leaf-mining moth) and its effect on *Echium*. (Grad. Dip. Sci.)
*STRONG, K.L. Systematics and host-parasite relationships in the mite genus *Psoroptes*. (PhD).
TRUEMAN, J.W.H. Odonate systematics and phylogeny (PhD).
*WILLIS, A.J. Impact of the biological control mite *Aculus hyperici* on non-target native *Hypericum* species (PhD).

Division of Biochemistry & Molecular Biology, Faculty of Science

GARCIA, R. Structure and regulation of the topaz eye colour gene of *Lucilia cuprina*. (PhD)
GILL, T. Structure function studies on the white gene of *Drosophila melanogaster*. (BSc Hons; co-supervised with John Curtin Med. Sch.)
ten HARVE, J. The regulation of the scarlet gene of *Drosophila melanogaster* and the molecular nature of natural mutation of the scarlet locus (MSc).
PERKINS, H. Molecular biological studies of genome organisation and transposable elements in *Lucilia cuprina* (PhD).
NIKOLAKOPOULOS, T. Identification and analysis of the cis-acting regulatory sequence of the cinnabar gene of *Drosophila melanogaster* (MSc).

Centre for Visual Sciences, Research School of Biological Sciences (RSBS)

DUBOIS, R. Motion processing in butterflies: applications for machine vision. (PhD).
HOLMQVIST, M. Visual determinants and neural components of the visually evoked escape response in flies. (PhD).
YANG, E. Spectral information processing in lamina cells of the dragonfly, *Hemicordulia tau*. (PhD).

Molecular Neurobiology Group, RSBS

JONES, M. The cellular and molecular basis of limb morphogenesis in the locust, *Locusta migratoria* (PhD)

Molecular Evolution & Systematics Group, RSBS

NINHAM, J. Comparative molecular biology of protozoan parasites of honeybees and grasshoppers. (PhD).

Molecular & Population Genetics Group, RSBS.

BARTOSZEWSKI, S. Molecular studies in *Drosophila melanogaster*. (PhD).
REED, D.S. Molecular analysis of low activity glycerol-3-phosphate dehydrogenase - natural genetic variance in *Drosophila melanogaster* (PhD).
WILANOWSKI, T. Biochemical and molecular studies of glycerol-3-phosphate dehydrogenase in *Drosophila melanogaster* (PhD).
WU, Y. Molecular analysis of alcohol dehydrogenase in *Drosophila melanogaster*. (PhD).

Division Of Entomology, CSIRO (with joint supervision in the ANU) (Dr J. OAKENSHOTT)

BAWDEN, A. Characterisation of the replication strategy of *Heliothis armigera* stunt virus (PhD).
COATES, C.J. Hobo and hobo-like elements and genetic transformation of the Australian sheep blowfly, *Lucilia cuprina*. (PhD).
CAMPBELL, P.H. Biochemical characterisation of juvenile hormone esterase in *Drosophila melanogaster* (PhD).
CRNOV, R. The molecular basis of entomopoxvirus infectivity (PhD).
DAVEY, M. Molecular analysis of the occurrence and distribution of sulfakinin neuropeptides in *Helicoverpa armigera*. (BSc Hons).
KAROTAM, J. Variation at the esterase 6 locus in *Drosophila simulans* and *D. mauritiana* (PhD).
KOSTAKOS, P. Insecticide resistance genes in *Drosophila* (Grad DipSc).
LIAO, C.Y. Resistance to Bt toxins in *Helicoverpa armigera*. (PhD).
MORRISH, B. Regulation of esterase 6 in *Drosophila* (PhD).
NEWCOMB, R. Molecular population genetics of organophosphate insecticide resistance in *Lucilia*. (PhD).
ODGERS, W. Molecular biology of juvenile hormone induction of esterase 6 in *Drosophila* (PhD).
PARKER, A.G. Molecular analysis of insecticide resistance in the Australian sheep blowfly, *Lucilia cuprina* (PhD).

PINKERTON, A. Genetic transformation of *Heliothis* (Grad DipSc).
ROURKE, I.A. Hormonal regulation of juvenile hormone synthesis in *Heliothis* spp. (PhD).
SMYTH, K.A. Malathion carboxylesterase in *Lucilia* (PhD).
SUTHERLAND, T. Hormonal regulation of juvenile hormone synthesis in *Lucilia cuprina* (PhD).
van PAPENRECHT, E.A. Differences in the regulation of esterase 6 among sibling *Drosophila* species (PhD).
VICKERS, R. The influence of codling moth female sex pheromone on mating behaviour and its potential as a mating disruptant (PhD).
WANG, J.X. Population dynamics of *Steinernema* and *Heterorhabditis* in *in vivo* and *in vitro* culture. (PhD).

TASMANIA

University Of Tasmania

Department of Agricultural Science

(Dr J.L. MADDEN)

APRIANTO, E. Control of scale insects infesting *Boronia megastigma*. (M Ag Sc).
BOWDITCH, T. Pest management systems for a food related industry. (PhD).
HAIFENG, L. Leaf chemicals and host tree selection by the eucalypt-defoliating beetle, *Chrysophtharta bimaculata* (Oliver) (Coleoptera: Chrysomelidae) (PhD).
LAWANPRASERT, A. Response of hop (*Humilus lupulus* L) cultivars on Two Spotted Spider Mite (*Tetranychus urticae* Koch) infections (PhD).
RATH, A. *Metarrhizium anisopliae* as a control agent for the Red-Headed Cockchafer, *Adoryphorus couloni* (PhD).
SHOHUT, D. Biological control, dispersal and ecology of *Chrysophtharta bimaculata* (Olivier)(Coleoptera: Chrysomelidae). (PhD).
STEINBAUER, M. Coreid bugs: population performance and damage potential in eucalypt plantations. (PhD).

Department of Zoology.

(Dr A.A.M. RICHARDSON)

EBERHARD, S.M. Biogeography of cave invertebrates in Tasmania. (MSc).
MATTHEWSON, A. Benthic recolonisation downstream of large obstacles. (BSc Hons).
ROBSON,B. Grazing interaction and habitat complexity: implications for stream benthos. (PhD).

Department of Geography and Environmental Studies.

BLAKE, G.M. Invertebrate community structure in remnant grassy woodland in the Tasmanian Midlands. (PhD).
JOHNSTON, K. Relationships between flora and invertebrate community structure in the Coal R. Gorge Reserve. (Hons).

SOUTH AUSTRALIA

Flinders University

School of Biological Sciences.

(Dr D.A. MACKAY)

HOOD, S. Host selection behaviours used by individuals of *Trissolcus basalis* (Hymenoptera: Scelionidae) in parasitising eggs of the Horehound bug *Agonoscelis rutila* (Heteroptera: Pentatomidae). (BSc Hons).
HUDSON, P. The physiological ecology of spiders on salt lakes. (PhD).

Waite Institute.

Department of Crop Protection.

(Dr D. COOPER)

AGELOPOULOU, N. Searching behaviour of the parasitoid species *Cotesia rubecula* (Hymenoptera: Braconidae). (PhD).
AZHAR, S. Systematics and phylogeny of the *Cotesia* group of genera (Hymenoptera: Braconidae) and revision of the genus *Diolcogaster* Ash. of Australia. (PhD).
BENNETT, M. Fitness feeding of *Harmonia conformis* on the aposematic aphid *Aphis nerii* on different host plants. (BAgSc Hons).
DANGERFIELD, P.C. Taxonomic revision of the Indo-Australian and Pacific species of *Cardiochiles* Nees von Esenbeck (Hymenoptera: Braconidae: Cardiochilinae). (MAgSc).
DEBARRO, P. Population ecology of cereal aphids and the transmission of barley yellow dwarf virus in wheat in the low rainfall areas of South Australia. (PhD).
FEUTRILL, C. Biological and cultural control of red scale of citrus (*Aonidiella aurantii*) in South Australia. (PhD).
FIELD, S.A. Host selection behaviour, ovipositor morphology and host relationships in scelionid egg parasitoids. (MAgSc).
FITZGIBBON, F. Integrated management of woolly apple aphid (*Eriosoma lanigerum*) in South Australia. (PhD).
FROST, W.E. Population ecology and distribution of cereal rust mite *Abacarus hystrix* (Acarina: Eriophyidae) in Australian dairy pastures. (PhD).
HILL, C.A. Histopathology and mode of action of *Bacillus thuringiensis* and the sheep body louse, *Damalinia ovis*. (BAgSc Hons).
JENNINGS, J.T. The systematics and biogeography of the Australian hyptiogastrine wasps (Hymenoptera: Gasteruptiidae). (MAgSc).
KINUTHIA, W. Biology, ecology, host plant relationship of *Aphis nerii* (Boyer de Fonscolombe)(Homoptera: Aphididae) and the effect of its natural enemies on the population. (PhD).

KITT, J. Introduction of *Aphidius rosae* (Hym., Braconidae) into Australia for biological control of the rose aphid (*Macrosiphum rosae*). (PhD).
LIGAT, J.S. A comparison of Australian pea seed borne mosaic virus isolates. (PhD).
LORRAINE, D.F. Plant-aphid interactions and the chemistry involved. (PhD).
MADDEN, C. The use of morphological deformities in chironomid larvae (Insecta-Diptera: Nematocera) as an indicator of insecticide and heavy metal pollution in water catchment areas of South Australia. (PhD).
MADHUSUDHAN, V. Interaction of the spotted alfalfa aphid and its host plant. (PhD).
TAYLOR, G.S. Comparison between the salivary physiology of the crusader bug, *Mictis profana* (Fabr.), a coreid, and the green lucerne mirid, *Creontiades dilutus* (Stal) (MAgSc)
WAHYUNI, W. Variation among CMV isolates and their interaction in plants. (PhD).
WEINSTEIN, P. Parasite interaction in trigonalid wasps. (PhD).

Department of Zoology.

DALTON-MORGAN, J. Species diversity in saline lakes. (BSc Hons)
MARCH, W. Using macrophytes to maximise macroinvertebrate biodiversity. (BSc Hons).
SHELDON, F. Effects of flow regulation on the ecology of the littoral zone of a semi-arid river. (PhD).
WADE, S. Downstream impact of road crossings on invertebrate assemblages in the Flinders Ranges. (BSc Hons).
WALLMAN, The taxonomic and biology of carrion breeding Calliphoridae in South Australia. (PhD).

COMING EVENTS

ADVANCE NOTICE OF 24TH AGM

The 1993 Scientific Conference and AGM of the Australian Entomological Society will be held at the Matson Plaza Hotel on the Esplanade in Cairns from 3-8 July, 1993. The Organising Committee encourages delegates to utilise the twin-share (and other) accommodation reserved at the hotel as little alternate accommodation will be available in Cairns in July. Some cheaper nearby accommodation will be arranged for *bona fide* students.

The conference will feature a wide-ranging program of entomological topics with a slight bias towards those of particular concern in the tropics e.g. medical and veterinary entomology, insect biodiversity, biocontrol of insect pests and weeds and tropical agricultural entomology. There will be limited opportunity for separate workshops but the committee will consider any suggestions. The full registration brochure will appear with the November issue of "Myrmecia" and prompt replies are urged so that accommodation arrangements can be finalised. As this will be the first AGM in northern Australia we look forward to your support.

Ross STOREY
Organising Committee Convenor
c/- QDPI Mareeba

Southern Temperate Ecosystems: Origin and Diversification

This conference will be held in Hobart, 18-22 January 1993 and is a joint conference of *Southern Connection*, Australian Systematic Botany Society and the Ecological Society of Australia.

Papers will be scheduled into five broad theme or into a general session. The themes are:

Biology of *Nothofagus*-dominated ecosystems.
Conifer evolution and ecology in the Southern Hemisphere
Evolution and biogeography in the Southern Hemisphere (plants and animals)
Interaction of indigenous people with South Pacific ecosystems
Ecology and sustainability of southern temperate ecosystems

For Program Information contact:
Dr R.S. Hill
Department of Plant Science
University of Tasmania
GPO Box 252C
HOBART TAS 7001
Fax: (002) 202698

Also Remember:

6th Internation Working Conference on Stored Product Protection
Canberra 17-23 April 1994
Contact: Dr B.R. Champ, c/- ACIAR, GPO Box 1571, Canberra, ACT 2601
Details: Myrmecia 28(1): 35

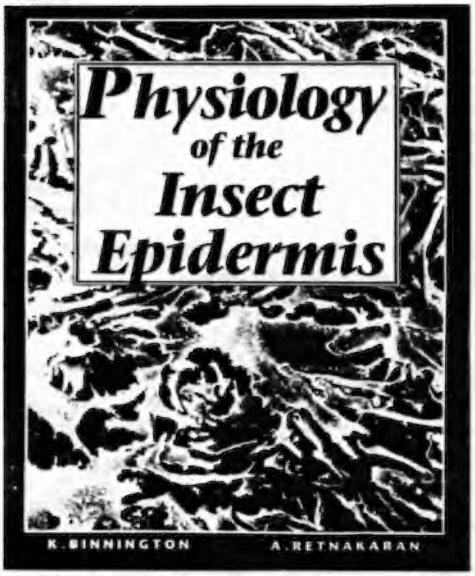
NEW PUBLICATIONS

Southern Connection Newsletter

The *Southern Connection* was founded as a result of a meeting at the Bishop Museum, Honolulu, in May 1991 with participants from Argentina, Chile, New Zealand, the US and Australia. The Southern Connection Newsletter is the groups newsletter.

The Newsletter aims to act as a vehicle for open communication between life scientists whose research interest includes biota that occur in the southern hemisphere. The first issue was published in January 1992 and the newsletter is available free from-

R.S. Hill, Dept of Plant Science, University of Tasmania, GPO Box 252C, HOBART, TAS 7001, Fax: (002) 202698



Physiology of the Insect Epidermis by K. Binnington and A. Retnakaran.

Dec. 1991. Cased Binding. $80 ANZ and $80US Overseas (+$15 for air delivery). 356pp.

In *Physiology of the Insect Epidermis* internationally recognised contributors provide a much needed appraisal of recent advances in the study of insect epidermis and cuticle. As well as critically evaluating current thinking, authors have generously supplied previously unpublished data and an abundance of high quality figures and electron micrographs.

Topics covered include epidermal cell biology and cell-to-cell signalling; hormonal control of differentiation and gene expression; chitin, lipid, arylphorin and catecholamine biochemistry; molecular biology of metamorphosis; cuticular permeability and its control; structure and physiology of peritrophic membrane; integument as a barrier to microbes; epidermis as a target for insecticides.

Researchers, advanced undergraduate and graduate students will benefit from these accounts of molecular, hormonal and biochemical aspects of the insect epidermis and of its interaction with microbial and chemical insecticides.

Available from CSIRO Publications, PO Box 89, East Melbourne, Victoria 3002, Australia

Butterflies of the Bulolo-Wau Valley by Michael Parsons

April 1992, Handbook No. 12 of the Wau Ecology Institute. Est. 262pp, 5 x 9, illustrated. Paper. ISBN 0-930897-61-7. $US34.95

This convenient field guide, lavishly illustrated with color photographs, is the first modern book on butterflies of Papua New Guinea. It describes and illustrates all 373 butterfly species in the Bulolo-Wau Valley, home to about two-thirds of mainland Papua New Guinea's butterflies. Eighty percent of the species are illustrated in color and detailed drawings highlight important features of the different species. The book includes chapters on biogeography, conservation ecology, economic importance and identification.

In presenting so much original information on habits, habitats and larval hosts (including many new foodplant records), this work makes a highly significant contribution to the otherwise scanty knowledge of the biology of the butterflies of the region.

Please send orders to
Bishop Museum Press
PO Box 19000-A
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MARKET PLACE

Phasmids, Cetoniines and Butterflies for French students

Mr Bouveur Serge, 29 Rue Le Sergeant, Saint-Omer, 62500, FRANCE, would like to obtain some Australian insects to use in displays for schools etc., and to set up breeding colonies for his study. He is particularly interested in phasmids, beetles (Cetoniinae) and butterflies. He has specimens from various parts of the world, except Australia, and would like some contacts over here so he can correspond with them and perhaps exchange specimens.

Members who would like to exchange specimens with M. Serge are requested to contact him directly.

FOR SALE

"Butterflies of the Australian Region" by Bernard D Abrera. First Edition 1971. Published by Lansdowne Press Pty Ltd.

with dust wrapper, Good Condition

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Contact: Ken Keogh (02) 498 2107

XXIII AES CONFERENCE, HOBART 1992 (Artwork by Angie Condello, BCRI)

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7 KR Blanche
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10 AA Calder
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12 AD Clift
13 IFB Common
14 J Common
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18 PR Davis
19 SL Doggett
20 RJ Elder
21 HJ Elliot
22 RA Farrow
23 HAC Fay
24 MJ Fletcher
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26 MJ Geary
27 AJA Green
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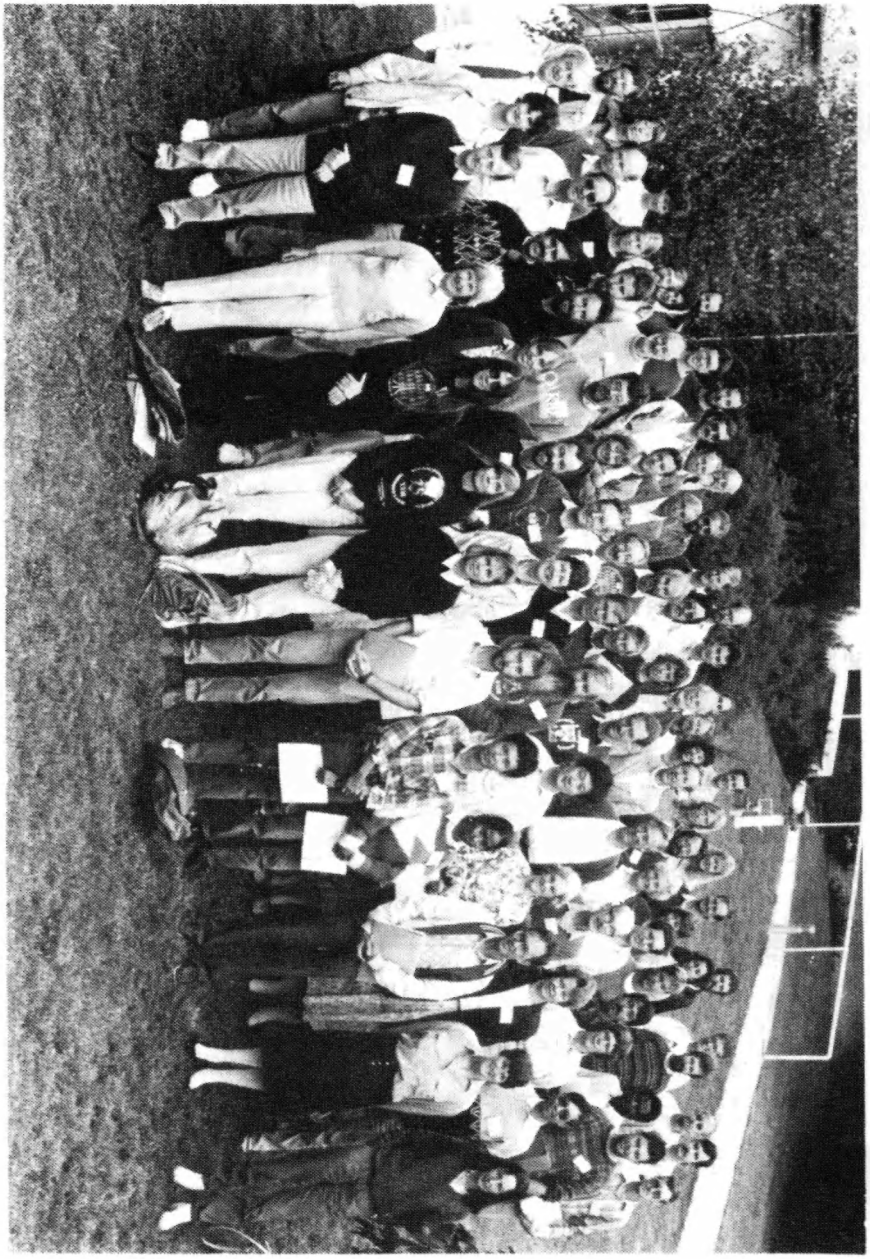
76 S Watanasit
77 P Weinstein
78 PW Wellings
79 MJ Whitten
80 MA Williams
81 AL Yen
82 AK York

XXIII AES Conference, Hobart
1992
OFFICIAL PHOTOGRAPH



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